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The effects of economic, social and cultural capital at home and in the neighbourhood on young people's educational attainment

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Declaration of Own Work

I, Carla Cebula, declare that this thesis has been composed solely by myself and that it has not been submitted, in whole or in part, in any previous application for a degree. Except where states otherwise by reference or acknowledgment, the work presented is entirely my own.

Signed: 

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Abstract

There continues to be large social class inequalities in educational attainment in England. At the same time, child poverty rates in England have risen (Family Resources Survey, 2018) which is likely to lead to worsening inequalities. This thesis aims to understand how different resources at the family and neighbourhood levels impact on young people's Key Stage 2 attainment using the English sub-sample of the Millennium Cohort Study linked with neighbourhood and education data (N=6445), thus providing important evidence for tackling existing inequalities.

Bourdieu's (1986) concepts of economic, social and cultural capital are used as a theoretical lens to capture both the material and non-material resources available to the family. The thesis also draws upon the work of Coleman (1988) and Putnam (2001) to study the role of social capital within the home and neighbourhood respectively and the neighbourhood effects literature, in particular the social neighbourhood mechanisms of relative deprivation versus competition and social contagion versus collective socialisation (Galster, 2012). The literature reviewed draws from both quantitative and qualitative studies to give a broad understanding of the various forms of capital and mechanisms which are behind the reproduction of inequalities in education. Improving upon previous quantitative studies which have tended to focus on individual capitals, this thesis models all three capitals (cultural, social and economic) together to provide a better understanding of how multiple resources impact on young people's attainment and to assess the extent of their influence. Exploratory factor analysis was used to create continuous measures of each capital for parents and children and cross-classified multilevel models were employed to analyse variation in attainment at family, neighbourhood, school and Local Education Authority

levels. Additionally, the thesis analyses interaction effects between capitals within and between the two contexts of interest, family and neighbourhood.

As expected, individual level characteristics explain the largest proportion of the variation in attainment. Parental cultural capital, in particular, and economic capital have a larger positive relationship to attainment when compared to the other capitals. Interesting results also emerge in relation to the ethnicity of young people. Bonding social capital (Putnam, 2001) is found to have a small positive relationship to attainment for Pakistani and Bangladeshi young people, while bridging social capital has a small positive effect for Indian individuals. Finally, economic and cultural capital present in the neighbourhood are found to provide an additional advantage for individuals who have higher economic and cultural capital at home, suggesting a relative deprivation effect at work (Galster, 2010).

One significant conclusion is that parent capitals are found to have a larger impact on attainment than capitals associated with young people's own cultural attitudes and practices. Additionally, it is established that without access to parent cultural capital, child cultural capital is less effective at increasing attainment. These findings suggest that policies directed at improving parent capital, either economic or cultural, or at providing additional support within and outside schools to deprived children to compensate for the lack of resources at home, are likely to have important effects on attainment and in turn on other life course outcomes.

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List of Abbreviations

CFI	Comparative Fit Index
CI	Confidence Intervals
DfE	Department for Education
DIC	Deviance Information Criterion
EBacc	English Baccalaureate
EFA	Exploratory Factor Analysis
FSM	Free School Meals
GCSE	General Certificate of Secondary Education
KS2	Key Stage 2
LEA	Local Education Authority
LSOA	Lower Super Output Area
MCMC	Markov Chain Monte Carlo estimation
MCS	Millennium Cohort Study
MLM	Multilevel Model
MSOA	Middle Lower Super Output Area
NPD	National Pupil Database
OA	Output Area
OECD	Organisation for Economic Co-operation and Development
ONS	Office of National Statistics
PIACC	Programme for the International Assessment of Adult Competencies
PISA	Program for International Student Assessment
RMSEA	Root Mean Square Error of Approximation

Chapter 1: Introduction

Over the last twenty years the social-class educational attainment gap for young people in England has remained a concern for politicians, academics and the public. Policy has been directed towards schools, neighbourhoods and individuals, aiming to reduce this attainment gap, with some improvements, yet there still remains a clear educational disadvantage for children from working-class and deprived families (DfE 2016a; 2016b; 2017a). Simultaneously, child poverty rates in England have risen (JRF, 2018a) which is likely to lead to worsening educational inequalities. This thesis uses quantitative survey data and advanced methods of data analysis to analyse the role of different types of capital, at home and in the neighbourhood, on young people's attainment at age eleven (Key Stage 2)[1].

This thesis uses Bourdieu's (1986) theory of capital, including economic, social and cultural capital, as a theoretical lens to guide the measurement of social class. It also draws upon the work of Coleman (1988) and Putnam (2001) to study the role of social capital within the home and neighbourhood respectively. This framework was selected as it assists in capturing both the physical assets and the attitudes and behaviours that can affect young people's attainment.

Many studies have considered the relationship between economic, social or cultural aspects of family background and attainment. However, these studies have tended to focus on just one aspect of family background, failing to capture how the three forms of capital may work simultaneously to support young people's educational attainment. Instead, this research uses economic, social and cultural capital in conjunction, with particular focus on the interplay between capitals.

[1] Data was collected in 2011 and the young people were born in 2000.

A second theoretical framework, focusing on the social mechanisms related to neighbourhood, is employed to capture the relationships between individuals and their neighbourhoods, in particular the social neighbourhood mechanisms of relative deprivation versus competition, and social contagion versus collective socialisation (Galster, 2012).

This chapter will continue by outlining the English context including the extent of educational inequality (socio-economic as well as ethnic and gender inequalities) before explaining the research motivation, the key research questions and the thesis structure.

1.1 Educational Inequalities

This section begins by establishing the scale of social class inequalities in educational attainment in England. This is followed by introducing other forms of educational inequalities in attainment, focusing on ethnic, gender and regional differences. To give a better understanding of the education system, the structure of schooling in England is summarised.

1.1.1 Socio-Economic Inequalities in Attainment and Basic Skills

It has been widely noted that children from the most disadvantaged backgrounds do less well at school than students from more advantaged backgrounds. Within the education literature, family disadvantage has most frequently been operationalised in two ways, through the parent's social class (using various social class classifications) (Strand, 2014; Andres et al, 2007) and whether the child receives Free School Meals (FSM)[2] (Smith, 2003; Strand, 2014; DfE national statistics; Wilson et al, 2011).

In the decades leading up to when the cohort members in this study were born (the 1980s to 2000) inequalities in educational outcomes between children from the least and most disadvantaged backgrounds were increasing (Gillborn & Mirza, 2000[3]), with children from the highest social classes (managerial and professional occupation) being three times as likely to attain five or more higher grade GCSEs than children whose parents had unskilled manual occupations (ibid). In more recent years, there remains a gap in attainment by FSM status, with a twenty-two percentage point difference in the proportion of young people reaching

[2] Each of these measures of family background have their own issues and have been discussed within the studies referred to and will be expanded on in the literature review

3 Gillborn & Mirza (2000) used values of attainment by parent occupation provided by the Department for Education and Employment originating from the Youth Cohort Study.

expected levels in Key Stage 2 performance by FSM status (DfE, 2016b) and with large gaps also being recorded at key stages 1 and 4 (see Table 1.1).

Table 1.1: Attainment at Key Stage Level by Free School Meals Status (2016)

Key Stage	Children not on FSM	Children on FSM
1(1)	83% reach level	69% reach level
2(2)	57% reach level	35% reach level
4(3)	51.6 (points)	39.0 (points)

[1]Met expected levels in Phonics Assessment DfE (2016a);
[2]Met expected levels in reading, writing and maths DfE (2016b);
[3]Average Attainment 8[4] Score DfE (2017a)

The Programme for International Student Assessment (PISA), an international comparison study of young people's educational performance in reading, mathematics and science, has also identified a strong link between a young person's socio-economic background and their mathematics performance (OECD PISA, 2012). The United Kingdom[5] was found to have a larger proportion of the variance in the PISA test score explained by socio-economic factors than the OECD average (ibid).

Among adults, a lack of attainment and low skills are also associated with family background. Recent analysis using the Programme for the International Assessment of Adult Competencies (PIAAC) found that the quality of basic skills are strongly related to parents' education, a proxy for the person's socio-economic background (Kuczera et al., 2016).

These basic skills, tied to socio-economic background, are what provide individuals with the capabilities required to navigate and survive at work, in day-to-day life and be a part of

[4] Attainment 8 score is the newest measure of attainment at Key Stage 4, capturing "the achievement of a pupil across 8 qualifications including mathematics (double weighted) and English (double weighted), 3 further qualifications that count in the English Baccalaureate (EBacc) measure and 3 further [...] GCSE qualifications" (DfE, 2016c). Scores are calculated by assigning grades a number of points, ranging from 1 for a grade G and 8.5 for an A*, and totalling this. This includes doubling maths and English grades.

[5] The OECD used the aggregate United Kingdom data (England, Scotland and Wales) for this 2012 publication.

modern society. As is seen, family background is crucial at all levels of educational attainment in England. While these relationships are well documented in England, further research is required to understand what aspects of disadvantage have the largest impact on young people's attainment. This will help identify areas that can be targeted by policy and this identification is a key aim for this thesis.

1.1.2 Other Key Inequalities in Attainment

While the key focus of this thesis is social class conceptualised through access to capital, by the time young people enter secondary school, other characteristics have been identified as important predictors of attainment. Three characteristics found to structure inequalities in attainment between young people in England are ethnicity, gender and region. These have been studied as important factors in their own right and so this section will briefly overview the high-level findings for each of these areas.

Different minority ethnic groups perform differently at Key Stage 2, yet it is often reported that minority ethnic young people, as a broad group, are outperforming their White peers. When we consider ethnicity in more detail it can be seen that the story is much more complex. In 2017, a higher proportion of Chinese, Indian, Other Asian, Bangladeshi and mixed ethnic[6] young people achieved the expected standard at Key Stage 2 (DfE, 2018a) when compared to their White peers. Whereas a lower proportion of Pakistani (56%), Black Caribbean (54%), Irish Traveller (20%) and Roma (16%) achieved the expected standard at Key Stage 2, proportions below those found for both their White peers (62%) and nationally (61%) (ibid). Therefore, ethnicity should be considered in as much detail as possible.

The differences in attainment across ethnic groups are often attributed to language skills, migrant status and migrant aspirations, parent aspirations more generally (Kao & Tienda,

[6] White and Asian, White and black African and Other Mixed background

1995), social class and parent education (Barglowski, 2018; Gaddis, 2018). Additionally, economic, social and cultural capital are believed to be distributed differently across ethnic groups (Barglowski, 2018; Crozier & Davies, 2006, 2007; Cabinet Office, 2017[7]), contributing to differences in attainment.

At Key Stage 2 there are also some clear gender differences in attainment, with girls outperforming boys in the combined writing, reading and mathematics test scores (DfE, 2018b). The same proportion of girls and boys reached the expected standard at Key Stage 2 in the mathematics test. However, in recent years, boys scored higher average marks in mathematics than girls (ibid). There is a large amount of literature on girls' underperformance in mathematics, suggesting a range of reasons such as parent and teacher attitudes to mathematics (Gunderson et al., 2012); a gendered curriculum and preconceptions of mathematics as a subject area (ibid; Clark Blickenstaff, 2005); gendered norms in society in general and in particular; a continually gendered employment market that makes mathematics education necessary, or not, for many gendered professions. Additionally, the distribution and increased educational attainment associated with more capital, particularly cultural capital, is seen to vary by gender, with girls being found to have more cultural capital yet gaining less educational return from it (Dumais, 2002; Sullivan 2008).

Regional inequalities are also found in young people's attainment at school, with 70% of pupils in London achieving 5 good GCSEs compared to 63% in Yorkshire and Humber (SMF, 2016). Additionally, less than sixty per cent of students (58%) in Yorkshire and Humber reached the expected levels for reading, writing and maths at Key Stage 2 compared to 66 per cent in London (Thomson, 2017). These regional variations in attainment are observed

[7] Minority ethnic individuals are more likely to be living in poverty and to have lower incomes and employment rates than White individuals. These are all aspects of economic capital.

throughout England, at a variety of levels within the school system. In addition to this, there are regional inequalities in school performance, suggesting that under-attainment is clustered not just within regions but also within schools in regions. In 2017, 57 primary schools in the East Midlands had 65% or more children not attaining the expected level at Key Stage 2, while London had just 14 primary schools (Nye & Thomson, 2017).

Other spatial inequalities have been reported within the academic literature and policy, with a focus on neighbourhood poverty and deprivation. In some cases, neighbourhood deprivation is used as a proxy measure for family socio-economic status, similar to the use of FSM by the Department for Education[8]. Others have considered the role of living in a deprived neighbourhood (Clifton & Cook, 2012) and this will be discussed further in the literature review (Chapter 3).

It should also be noted that inequalities have been observed for many of the intersections between these groups (social class and poverty, ethnicity, gender and region). For example, poor White students do worse on average than poor minority ethnic students (Gillborn & Mirza, 2000), while the performance of minority ethnic students in some areas of England is better than that found across the country as a whole. Therefore, these variations should be considered.

Finally, differences in access, use and returns of economic, social and cultural capital by gender and ethnicity will be discussed in more depth within the literature review. As this thesis accounts for all three capitals, it will determine the relationship between these additional characteristics and attainment, when accounting for access to the three forms of capital. This is an important task as the differences in access and returns of capital are not

[8] Note, the Scottish Government and Education Scotland (the body in charge of school inspection), utilise the Scottish Index of Multiple deprivation in school inspection and funding distribution as a proxy for family deprivation.

thoroughly discussed within the literature and the capitals are not accounted for in national statistics.

1.2 Research Motivation

The key motivation for this research is the consistent patterns of lower attainment found amongst children living in deprived and working-class families. Having worked as a statistician, creating statistical reports for school and college inspection, I was concerned about the consistent lower attainment of deprived young people. Although these educational institutions were criticised by the inspectorate when large social class attainment gaps were found, the mechanisms by which deprivation effects attainment was not fully elucidated.

Additionally, having volunteered as an adult education tutor while doing my undergraduate degree I worked with many adults with low reading, writing and numeracy skills. In most cases these adults were perfectly capable of learning but had experienced difficult childhoods and/or negative school experiences. Most shocking was when a new member joined our group, in their early twenties, bringing to the forefront that this is not just a problem affecting older adults who attended schools decades ago, but one that effects young people who are continuing to leave school without these basic skills. To have a lack of skills drastically affected their lives, making it difficult to find work and manage the tasks associated with independent living as well as reducing their confidence.

Finally, increasing poverty levels in the UK have become more visible with a rise in foodbank use and increasing homelessness (Fitzpatrick et al. 2018). In line with this, teachers have reported increasing numbers of children attending school without their basic needs being met which in turn affects their ability to learn at school (NEU, 2018). Therefore, one of the key aims was to consider the relative impact of economic capital, in comparison to cultural and social capital, on young people's attainment.

1.3 Research Questions

The main issue addressed by this thesis is whether and to what extent **economic, social and cultural capitals at home and in the neighbourhood are related to young people's Key Stage 2 (KS2) attainment**. The thesis wishes to answer two research questions (Q1 and Q2) and two additional sub-questions (Q1.1 and Q2.1) to examine how the capitals interact with each other at family level and between family and neighbourhood levels.

Q1: To what extent are family economic, social and cultural capitals associated with young people's educational attainment?

As outlined above, socio-economic status and deprivation are seen to have a strong link to attainment, however, further elucidation is required to understand what resources are most strongly associated with better attainment. Few studies have considered young people's access to all three forms of capital, failing to capture how economic, social and cultural capital may work in conjunction to support young people's attainment. Therefore, this research aims to fill this knowledge gap.

Q1.1 What is the interplay between different forms of capital at home?

In particular, this thesis will address the question of whether individuals gain any additional advantage from having access to multiple capitals. This question has not been addressed in other studies as all three capitals have not been included.

Q2: To what extent are neighbourhood economic, social and cultural capital associated with young people's educational attainment?

The structure of education, and in particular schools, means that there is a link between neighbourhoods and the schools young people attend. Additionally, neighbourhood effects theories suggest that the neighbourhood that young people live can impact on their educational attainment. For these reasons, this thesis addresses multiple contexts that may impact on young people's attainment.

Finally, the second sub-question wishes to understand how the contexts of neighbourhood and family interact.

Q2.1: What is the interplay between neighbourhood and individual capitals and characteristics?

1.4 Thesis Structure

This chapter demonstrated the extent of educational inequalities in attainment by social class, showing how these inequalities are consistent over the various education levels. The following chapter will give further contextual information, outlining relevant policy, the education structure in England and the key mechanisms (parental choice, school type and admissions criteria) that link family, neighbourhoods and schools. The third chapter outlines the theoretical framework, explaining the choice of Bourdieu's theory of capital (economic, social and cultural capital) as a theoretical lens, and neighbourhood mechanisms to capture the relationships between individual and neighbourhood characteristics. These are developed further in the literature review, expanding on the work that has been undertaken to look at the effects of economic, social and cultural capital at home and in the neighbourhood. Reviewing the literature it becomes clear that there are few studies that use all three forms of capital, with varied findings in the cultural and social capital literature. At the neighbourhood level, few studies in the UK have operationalised neighbourhood mechanisms by using between level interactions, meaning that they were unable to investigate how neighbourhoods differently affect residents. The fourth chapter outlines the methods selected and why, in particular, the need for a cross-classified multi-level structure. The sampling, variables and surveys of the three datasets used for this thesis (the Millennium Cohort Study, the National Pupil Database and the 2011 Census) are discussed and contrasted to other datasets available. The analysis undertaken to answer the main research questions is spread across the three analysis chapters. The first analysis chapter (Chapter 5) focuses on the family level, creating variables to capture the three forms of capital and continuing to model their effects on young people's attainment. Chapter 6 adds neighbourhood characteristics to the models as well as using random slopes models to look at variation in the effects of family capital across neighbourhoods. It also applies a proxy

method to identify whether neighbourhood effects are present by using sub-samples of the population that are more or less reliant on neighbourhood. The third analysis chapter (Chapter 7) introduces the single school level variable available, school type, as well as undertaking school level random slopes models. The second half of Chapter 7 introduces a longitudinal aspect to the analysis. The final chapter (Chapter 8) discusses the findings of this research in relation to the literature and policy context.

Chapter 2: Context

There has been rapid change in both education and welfare policy in England in the last 20 years. The young people in this study will have lived through three governments: New Labour, led by Tony Blair (1997-2007) and briefly by Gordon Brown (2007-2010); Conservative and Liberal Democrat Coalition[9], led by David Cameron with Nick Clegg as Deputy Prime Minister (2010-2015); and most recently the Conservative party, David Cameron (2010-2016) and Theresa May (2016-present). Each of these governments emphasised the importance of education in ending inequality and improving social mobility, introducing and abolishing many policies yet continuing a roll back of public services and funding (Ball, 2017).

There now follows an outline of the key policies related to family capital, neighbourhood and education for the three governments in power over the life course of the young people – born in 2000 – that will be studied. These policies will be drawn upon in later discussions and provide further context to the issues under study. This overview will be followed by a description of the structure of the education system in England.

[9] For the rest of this thesis the Conservative-Liberal Democrat coalition government will be referred to as the Coalition Government

2.1 New Labour Policies (1997-2010)

The Labour Government had a strong focus on education, with Tony Blair famously saying that the Government's "priority was, is and always will be education, education, education"[10]. They introduced a variety of education policies directed at schools, from reducing class sizes to the expansion of early year's education, the introduction of literacy hour[11] to increasing teacher numbers (McKnight et al., 2005). However, these policies tended to focus on improving attainment across the board. The impact of these changes on young people's attainment is not clear-cut. Some of New Labour's policies improved base levels but there remained a large gap in attainment between deprived and advantaged pupils (McKnight et al., 2005).

One of the key education policies continued by New Labour, although not initiated by them, is the marketization of education (West & Pennell, 2002). Hatcher (1998) describes the development of this marketization from the Thatcherite model of internal marketization [12] to a New Labour version of external marketization, opening up the public sector and, in this case, schools to the private sector (ibid). The introduction of academies part funded by businesses and the third sector is a good example of this.

Labour's policies on the reduction of educational inequality and ending the link between family background and attainment tend to centre outside of the classroom. Firstly, by reducing the effects of living in disadvantaged areas, and secondly, by 'improving' parenting (Gewirtz, 2001) and reducing the negative effects of 'broken families'. Many of the initiatives included in New Labour's place-based policy had the primary intention of improving

[10] Tony Blair at the launch of Labour party education manifesto at the University of Southampton in 2010

[11] An hour each day dedicated to literacy skills

[12] This was mainly comprised of making schools work in a more business-like manner, giving schools more financial autonomy and the introduction of consumer (parent) choice into the education market

educational attainment. These included Education Action Zones and Excellence in Cities (Lupton & Power, 2005). Others had a broader area-based focus but were intended to improve child development (such as Sure Start) and education standards within an overall aim of ending area-based poverty (New Deals for Communities). Sure Start also targeted parents within the community, believing their lack of resources and understanding around child development to be one of the causes of low attainment of children in deprived areas. It focused on improving parenting skills and the home learning environment (Eisenstadt, 2011; Ball, 2017). These projects were found to have a varied impact on attainment in deprived areas. Education Action Zones had a "patchy" effect on attainment (McKnight et al., 2005), while Sure Start improved home learning environments but did not have an effect on children's cognitive abilities (Eisenstadt, 2011). Excellence in Cities initially only targeted secondary schools although towards the end included some primary schools. It was found to have the most positive effect, with a small improvement on Key Stage 3 attainment and a large impact on reducing absences (Machin & McNally, 2008). Finally, New Deals for Communities had a varied effect on other aspects of place[13], however, the effect on educational attainment was minimal (Batty et al., 2010).

The investments made in education under New Labour show a marked shift from those made by the previous Conservative government with spending increasing to 6.2 per cent of Gross Domestic Product (from 4.2 per cent) (Lupton et al., 2015). It is also evident that the government took clear steps to redistribute resources to the poorest schools and areas, yet the impact of this redistribution was varied. Literacy Hour can be seen as one of the most successful policies to be created under New Labour, yet this was rolled out across all schools, benefiting students from a variety of backgrounds. Overall attainment for the most deprived students did improve. However, most would argue that the gap between FSM and non-FSM

[13] New Deals for Communities had positive impact on reducing crime and improving housing.

students remained too large (ibid). Labour also brought area and neighbourhood inequalities onto the policy agenda as a consequence of having observed increasing inequality in services between deprived and affluent areas.

2.2 Coalition Policies (2010-2015)

The Conservative-Liberal Democrat coalition government was composed of a Conservatives majority and Liberal Democrat minority, with David Cameron as Prime Minister and Nick Clegg as Deputy Prime Minister[14].

The education policy discourse of the Coalition Government gave emphasis to reducing educational inequality through the ideas of social mobility and meritocracy (Lupton et al., 2015). The key education policy that was aimed at reducing inequality, although framed as improving social mobility, is the introduction of the Pupil Premium. The Pupil Premium "is additional funding for publicly funded schools in England to raise the attainment of disadvantaged pupils of all abilities and to close the gaps between them and their peers" (DfE, 2014b). The Pupil Premium replaces previous area-based distribution of resources used by Labour, directing funding to students who receive FSM or who are in care. This means that schools in deprived areas, with higher levels of FSM students, receive more financial resources than schools with lesser levels of deprived students. However, individual pupils who come from deprived families in wealthier areas, who would not have benefitted from Labour's area-based distribution, also receive additional funding. A few weaknesses have been observed with the Pupil Premium. Firstly, FSM is a narrow measure of poverty, requiring parents to be receiving benefits[15]. Poverty and deprivation affect individuals beyond those receiving benefits while the changes made to the benefits system during the Coalition government reduced the number of individuals able to claim benefits[16]. In addition to this, a review of the Pupil Premium highlighted that schools were not always directing funding

[14] For the rest of this thesis the Conservative-Liberal Democrat coalition government will be referred to as the Coalition Government.

[15] There are a range of benefits that allow parents to apply for FSM such as Income Support, Jobseeker's Allowance and Working Tax Credit. It should be noted FSM is opt-in, meaning parents must actively seek FSM for their child.

[16] Note the increasing in-work poverty in the UK (JRF, 2018b)

towards the needs of the most deprived students (Carpenter et al., 2013). General funding changes also meant that until 2012/13 the Pupil Premium just replaced other funding that had been cut by the Coalition Government (Lupton et al., 2015). Consequently, many schools had to use this funding to cover the teaching activities rather than provide additional support to FSM students.

The Coalition Government made additional changes to the statistical information used for inspection. They increased inspection focus on the FSM attainment gap [17] and introduced attainment-8 and progress-8 measures. Analysis of the FSM gap in attainment over the period of the Coalition Government shows a mixed effect at different levels. Between 2010 and 2014 there was a reduction in the gap for Key Stage 2 maths (16.1 percentage points to 12) and English (17.0 percentage points to 13)(Lupton et al., 2015). However, there was also an increase in secondary schools rated as 'inadequate' in deprived areas during the Coalition period (ibid). This could be related to the move away from allocating additional funding based on area deprivation.

There was a continuation and expansion of parental choice, with parents being given a wider range and number of schools to choose from. The increased marketization of the education sector occurred at an unprecedented speed, with unexpected numbers of schools wishing to convert to academies (Lupton et al., 2015). During the New Labour government the introduction of academies was seen as a way to improve failing schools in deprived areas. The Coalition government opened up academy status to schools outside of those failing in deprived areas, pushing for whole system change. Typifying this shift, schools considered 'outstanding' at their last inspection were allowed to fast track their academy conversion.

[17] The difference between the proportion of students receiving Free School Meals (FSM) who attain a given level compared to the proportion not receiving FSM

In terms of policy directed at neighbourhoods, the Coalition did not have any clear focus on deprived neighbourhoods. Instead, there was a focus on improving local economic growth and giving the residents of communities more powers through the Localism Act (Department for Communities and Government, 2011). However, geographically the areas involved in economic growth were significantly larger than neighbourhoods, with no specific emphasis on improving the lives of deprived families. This may indicate a return to the idea of trickle-down economics, where the poorest are expected to eventually benefit from the wealth of their neighbours. While never generating new neighbourhood renewal policies, many of New Labour's policies directed at neighbourhoods, such as the New Deals for Communities and the Excellence in Cities, were discontinued. Finally, many other policies outwith the areas of education and neighbourhood had an adverse effect on the poorest families (De Agostini et al., 2014), in particular, changes to the welfare system (Hills et al., 2015).

In summary, the Pupil Premium directed a substantial amount of money to poorer children however, the benefits of this are not clear in the attainment data at the end of the Coalition's time in office, this likely because large scale policies take time to impact individuals. The school system continued to move away from a comprehensive system, increasing the options for parents and opening up new types of schools to middle class parents. There was little focus on neighbourhoods and concentrated areas of poverty while many policies outside of education and neighbourhood renewal increased the polarisation of poverty within communities and society as a whole.

2.3 Conservative Policies (2015-present)

The period of Conservative Government covers the smallest proportion of the lives of the young people in this study. They were interviewed at age eleven and all of these policies were introduced at a time post data-collection. However, to give some context to the policy progression, as well as to give context to the discussion section of this thesis (Chapter 8: Conclusions), it is necessary to outline the key themes found within this Government's policy. Although this is over a short period, the Conservative government's rule can be seen in two interlinked sections, pre and post-Brexit referendum. During David Cameron's time as Prime Minister, there was a continuation of the policies delivered during the coalition. These included continuing to increase the number of academy secondary and primary schools, increased autonomy for schools and the Pupil Premium. Theresa May followed this with a stronger emphasis on traditionalism (Ball, 2017). While few changes have been made, May has emphasised the need to return to a traditional academic curriculum, increasing selectivity for academies and free schools, re-introducing grammar schools (DfE, 2017b), and making changes to the calculation of school funding (DfE, 2017c).

2.4 Education Structure and Schools

The structure of the education system in England[18] is complicated and there has never been a fully unified system meaning that schooling has varied between local authorities in England. From the first provision of state education in the 19th century to now, the system has had an ad hoc element to its development. Policy changes have often meant that the whole system has not been reformed concurrently, but instead has allowed a degree of flexibility (Ball, 2017). Understanding the education structure is crucial to being able to interpret the role of family and neighbourhood on young people's attainment.

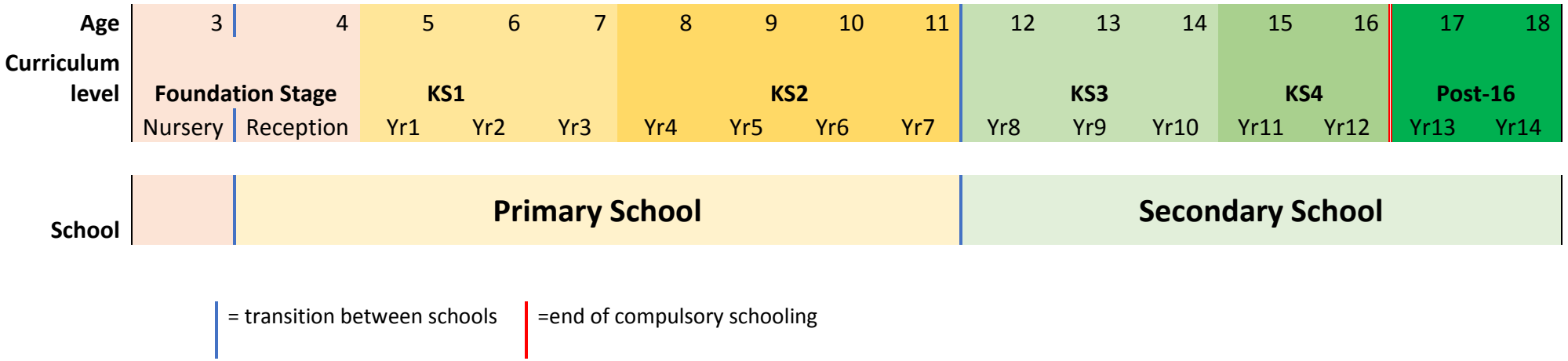
A single curriculum and a national system of statutory testing in primary schools was introduced in England in 1988 (Wyse & Torrance, 2009), prior to which there was no state control of the curriculum, with local authorities controlling schools and schools setting their own curriculum. As national testing has been introduced at all levels of school education, school comparison and improvement have been monitored more closely by both the state (through inspection) and the public (through the publication of league tables).

In England, children start school between the ages of five and six. However, 15 hours of early-years childcare is provided for three to four-year olds and most children attend reception class at their primary school between the ages of four and five. Primary schools run from the age of five to eleven. Two statutory tests are undertaken at primary school, Key Stage 1 tested in years 1 and 2 (roughly age seven) and Key Stage 2 at the end of primary school (age eleven) (DfE, 2013; DfE, 2014a).

In England, secondary school is started at age eleven or twelve, with the type of secondary school varying by region (this will be discussed in more depth in the following section, 2.4.1 School Types).

[18] The UK has different education structures throughout the four countries.

Figure 2.1: Education structure in England



Further testing is undertaken at secondary school, Key Stage 3 in years 7 to 9 (11-14 years), key stage 4 in years 10 to 11 (14-16 years) and post compulsory exams, usually A-levels (16-18 years) (DfE, 2014a). A-levels are the highest school qualification and are required by students to attend university.

In 2013, the compulsory leaving age was increased from 16 to 18, although this does not require students to stay at school. Young people must remain in some form of education or training until they are 18. This means that after year 11, young people can continue at school, go into work-based training or go on to further education (usually college).

2.4.1 School Types

The young people included in this study – born in 2000 – are now in secondary education, though at the time of data collection they were finishing their primary education. It is necessary to outline the current secondary system as this is closely related to the current primary school system both in the types of school available and the process of privatisation seen within the sector. Many school types were introduced at the secondary level and then expanded into the primary sector. Additionally, selective secondary schools mean that attainment at primary level is crucial in determining the secondary school young people will attend.

The types of state school provision available to young people in England is vast and illustrates well the fragmentation in the system. The major secondary school options stem from the tripartite system in the post-war era and the later comprehensive reforms, plus the private and religious schooling that existed long before state provision. The tripartite system had three types of state funded schools: state-maintained grammar schools, for top students focusing on academic subjects; secondary technical schools, selective and focused on science subjects, although less so than grammar schools; and secondary modern schools, not

selective and focused more on practical skills although often offering academic subjects at lower levels. Comprehensive, non-selective, schools were introduced in the mid-1960s, with the Education Act 1976 making it a legal requirement for Local Education Authorities (LEAs) to make plans to turn all schools into comprehensives. However, the Act was later repealed, resulting in some LEAs having converted all schools to comprehensives, while others had made few changes. State primary schools are comprehensive in nature and cannot select by ability. However, the levels attained at the end of primary can determine access to secondary school, with the importance of primary attainment varying by LEA due to the unequal distribution of selective schools.

City Technology Colleges (Education Reform Act 1986), with a focus on science and technology, and Grant Maintained Schools (Education Reform Act 1988) (Ball, 2017), that allowed for schools to be directly funded by central government and managed by a governing body, were both introduced in the late 80s. In both cases, few schools converted to City Technology Colleges or Grant Maintained Schools (Simon, 2000). Although few of these schools were established, the distribution of students across schools varied depending on policy emphasis. In particular, the 1980 education reform act introduced assisted places at independent (fee paying) schools (Ball, 2017) increasing the numbers accessing private education.

Academies and Free Schools are one of the key school types to emerge in the last fifteen years. As discussed in Section 2.1 on New Labour Policies, academies were first launched in 2000 by the New Labour government (West & Pennell, 2002), focusing mainly on failing and deprived secondary schools. These new types of school were based on the Charter Schools in the US and Free Schools in Sweden (Ball, 2017).

The Coalition Government continued this direction by increasing the number of academies and introducing free schools in 2010. This increase was due to academy status being made

available to any school, including schools in advantaged areas and primary schools. Academies and free schools are not supervised or funded by LEAs. Instead they are managed by Academy Trusts and third parties and funded by central government in partnership with the third party. For free schools the third parties can be businesses, charities, universities, independent schools, community and faith groups, teachers and parents on a not for profit basis. Both schools follow a non-selective school admissions criterion (unless faith based) and cannot select pupils by ability (see school admissions criteria in the following section, page 28). This is an expanding segment of primary school provision in England and shows a clear shift towards the privatisation of the primary school sector.

There are two further alternative schooling types, religious schools and private education. State funded religious schools are allowed to be selective based on religion, while receiving part of their funding from religious bodies. They are usually required to teach the main body of the national curriculum however, an alternative curriculum is often taught for religious education. Private schools (sometimes referred to as public schools in England) are fee-paying schools that are not funded by the state. These schools are not required to teach the national curriculum (although most do so that children can sit the national examinations). These schools can be selective on ability, although not all are, and due to the financial commitment required by parents, they tend to have a cohort made of predominantly middle- and upper-class children. Again, these schools exist at both primary and secondary level.

Due to the array of different school types, with different funding and admissions, the distribution of resources and quality of education is not uniform. This distribution often reflects that of the families they cater for. In turn, this could put young people from disadvantaged families into a situation of multiple disadvantage, in terms of the school's resources and composition, as well as family background.

2.4.2 Parental Choice

Parental choice was introduced into the English education system through the Education Reform Act 1988, allowing parents to choose what primary and secondary school their child attends. It was designed to introduce competition between schools, with the assumption that parents would want to choose the highest achieving schools, attracting the best students, making schools strive to perform better. It was also meant to achieve a more balanced distribution of young people with different backgrounds amongst schools. Attending the local school was believed to increase inequalities between schools, as individuals tend to live nearby similar people. It was also seen to create unequal distributions of deprived and minority ethnic students.

Current practice in England means that LEAs must give parents the opportunity to state and rank preferences for what primary and secondary school their child will attend. Undersubscribed schools must give a child a place if the parent has requested it. Oversubscribed schools are required to rank applications by their school admissions criteria, which must be published by the school and frequently use catchment areas and distance criteria to rank applications.

Work undertaken by the Centre for Longitudinal Studies, using the Millennium Cohort Study (wave 5), suggests that around 73.9% of parents in England apply for a preferred primary school (Hansen & Vignoles, 2010)[19]. However, further evidence has suggested that school choice is not distributed evenly between different families with high SES families being more likely to make a choice of school. In addition to this, the schools accessible to young people from the most deprived backgrounds have, on average, a lower attainment level and less advantaged composition (more students on FSM) than those from less deprived

[19] 3.8% of parents in England do not apply for a state school and the child attends a fee paying school (Hansen and Vignoles, 2010)

backgrounds (Burgess et al., 2011). Earlier analysis also suggests that school choice seems to have had the opposite effect in distributing young people of different backgrounds between schools, with primary schools being more ethnically segregated when compared to the local areas surrounding them [20] (Johnston et al., 2006) and more segregated by SES (using FSM; Noden, 2000). This emphasises the connection between a young person's background characteristics and the composition of both area and school, making these important factors to include in the analysis. Particularly relevant at the primary level, is the use of catchment areas and distance criteria by school admissions. This has been highlighted as a way for parents to get their children into the best non-selective schools by financial means. Gibbons et al (2013) showed that families have to pay a premium of up to £61,000 to move to a house near a top over-subscribed school, meaning that geography plays an important role in segregating students based on the housing that their families can afford. Therefore, while primary schooling is not selective by family or child characteristics, the family circumstances of children within the same primary school are likely to be correlated.

[20] Local areas were operationalised as Output Areas, Lower Super Output Areas and Middle Super Output Areas (Johnston et al., 2006)

To summarise, there continues to be a gap in attainment by socio-economic status for young people in England despite continued policy focus. Variation in school types, parental choice and the use of distance-based admissions criteria, when combined, all contribute to the inequalities discussed in Section 1.1 on Educational Inequalities. The use of distance criteria for admissions to over-subscribed schools can favour parents who can afford housing within these areas, this is confirmed by the work of Gibbons et al (2013) showing that parents pay a premium to live near the top oversubscribed schools. Additionally, research into catchment areas suggests that children from more disadvantaged and minority ethnic backgrounds have fewer 'good' schools near them (Burgess et al., 2011; Johnston et al., 2006). This means that there is a strong link between family economic capital, neighbourhood and school. Additionally, the variation in the types of schools accessible to children can add further stratification of students between schools. Therefore, when addressing the social class inequalities in attainment, these structural factors must be acknowledged.

Chapter 3: Capital, place and attainment in the literature

3.1 Theoretical Framework

The aim of this thesis is to gain a better understanding of the social class attainment gap identified in Chapter 1 (Section 1.1, Educational Inequalities). Therefore, a suitable theoretical framework must be able to capture not just the social class of young people's families but the assets, behaviours, actions and attitudes that contribute to this variation in attainment. While theories of reproduction have tended to focus on the role of family in reproducing existing social stratification, neighbourhood effects theories have focused on the relationships between neighbourhood composition and individual outcomes, overlooking mechanisms occurring in the home. Therefore, to investigate the central research question, i.e. whether economic, social and cultural capitals at home and in the neighbourhood have a relationship to young people's Key Stage 2 attainment**,** the theoretical framework for this thesis draws on theories explaining both the family and neighbourhood environment.

Prior to developing the main research question various theories of social reproduction were considered as possible explanation for the role of individual and family factors on young people's attainment. One key characteristic that was sought in a suitable theoretical framework was that the theory should explain the interrelationship between family social class and wider social structural factors in explaining social class variations in young people's attainment. Bourdieu's (Bourdieu & Passeron, 1990) Theory of Reproduction and Rational Action Theory (RAT) (Goldthorpe, 1996; Goldthorpe, 2010) were identified as the key sociological explanations for varying educational outcomes by family background. Both theories consider how the assets available at home can impact on young people's

educational outcomes, yet they differ in their emphasis on the individual's role within larger social structures, the scope of what is considered a resource and the mechanisms underway.

RAT's main premise is that "actors come to choose particular courses of action in pursuit of their goals – using the resources that they command and adapting to the opportunities and constraints that characterize their situation" (Goldthorpe, 1996, 486). They emphasise the rationality[21] of all actors irrelevant of their social class origin and that individuals from working class backgrounds are not constrained by class cultures but instead by the options that they have available or perceived as available to them. Social reproduction occurs because individuals make choices under these constraints, with those from working class backgrounds seeing less educational opportunities available to them and being unable to balance the costs with the benefits of educational progression (Goldthorpe, 1996).

The second individual level theoretical approach considered encompasses two theories proposed by Bourdieu, his Theory of Capital and of Reproduction. Combined, these theories aim to explain how a young person's access to capital at home impacts on their educational attainment due to the advantages that different forms of capital at home can provide within the education system. Educational success or failure is then believed to advantage or disadvantage these individuals in the labour market, in turn reproducing the existing social stratification.

Bourdieu's theory of reproduction and the related theory of capital was selected over RAT for a range of reasons. Firstly, the focus of this study is the educational attainment of children at age eleven. This raises an issues with applying RAT in this research context as few major educational decisions are made at this age (by parents or children), making it difficult to

[21] Goldthorpe and colleagues emphasise that individuals act in a rational manner but not like the rational actors of economics, instead individuals act in a roughly rational manner by considering and weighing up their options as in a cost benefit analysis.

identify and operationalise measures of the day-to-day decisions made by parents and young people that effect attainment. Instead, RAT is more suitable for studying later educational choices, such as subject choice and entering higher education.

Although RAT recognises the constraints individuals have due to individual's access to resources, it puts much of the structural aspect of inequality in attainment onto the individuals and their decisions, as each individual is considered 'rational'. This mirrors the deficit models found in classical economics, where the poor are believed to be poor because of their own bad choices (Hatcher, 1998). Overall, it was believed that this would be an unhelpful stance that does not effectively address the structural inequalities faced by individuals. In addition, the definition of resources utilised by RAT is narrower than Bourdieu's capitals. This is primarily due to RAT avoiding the introduction of 'class culture' to their theory, meaning that attitudes, opinions and aspirations as well as some behaviours that would be identified within Bourdieu's three capitals are not recognised within the RAT literature. This research sought a broad lens to view social class and therefore the choice of Bourdieu's capitals over RAT's resources was made. Finally, although RAT is not used to develop the theoretical framework for this research, some concepts from RAT, such as social capital, will be discussed in the literature review (see Section 3.2.4 on Social Capital – Bourdieu and Coleman).

The second theoretical approach that will be used focuses on the neighbourhood mechanisms (the pathways that lead from the composition of a place to a change in behaviour, belief or attitude of the individual) that affect young people's education. These mechanisms and the literature using them are summarised in the work of Galster (2012). Bourdieu's theory of capital is rarely applied at a place level but discussion will be presented on how the theory of capital can help to capture the composition of a place and the ways in which place can come to restrict or encourage educational behaviour.

By combining these two theoretical approaches, it is possible to account for reproduction occurring at both home and in the neighbourhood, as well as being able to link these two contexts through the analysis of the three capitals at both levels. These broad theoretical approaches for conceptualising and measuring family and neighbourhood capital, and the mechanisms that link the individual's behaviour with the composition of the neighbourhood, will later be expanded in the literature review. Opposing and complementary concepts and operationalisations, such as considering the work of Putnam and Coleman on social capital, will also feature in the literature review.

3.1.1 Theory of Capital

Bourdieu's theory of capital, as described in The Forms of Capital, comprises three parts: economic, cultural and social capital (Bourdieu, 1986). Concisely, economic capital includes an individual's income and wealth; social capital is dependent on an individual's social network and the capital that can be mobilised by those within that network (Bourdieu, 1986; Plagens, 2011); and cultural capital is an individual's access to the cultural goods and practices of the dominant classes within that given society, known as the dominant culture. The attitudinal and behavioural aspects of cultural capital are theorised to pass from parent to child through socialisation. Each capital and the relationship between capitals allows for the construction and maintenance of social structures through three mechanisms: convertibility, accumulation and exclusion.

A key aspect of Bourdieu's theory is that all forms of capital are convertible from one type (economic, social or cultural) to another. For example, if a person has economic capital (money) this allows them to purchase cultural objects, such as books or musical instruments, converting their economic capital to cultural capital. Devine (2004) suggests that as educational expansion has meant more people can access educational qualifications, middle class families have tactically invested in other forms of cultural capital to make them "stand

out from the crowd". As Devine's research illustrates, those with access to one capital can invest in and access others (Bourdieu, 1986) and thus making it clear how those who are economically privileged can also easily become culturally and socially privileged.

These capitals are also able to accumulate (Savage, 2015), which in turn contributes to the maintenance and reproduction of social positions over time while also providing a sense of security for those with these capitals. By investing in social or cultural capital the investment (such as social network or cultural knowledge) do not necessarily need to be deployed immediately. They can be kept for use at an appropriate time, for example, when looking for work or when answering a question in class. This banking of economic, social and cultural capital leads to the accumulation of capitals, allowing those individuals to use different or multiple means to achieve the desired outcome. As economic, social and cultural capital are distributed unevenly they can be used to exclude those without, with less or with the incorrect capital for the situation (Lamont & Lareau, 1988; Nash, 1990).

The use of Bourdieu's theory of capital benefits this project in multiple ways. Firstly, its use of three capitals creates a much more diverse understanding of the ways in which families can support their children. It departs from measures of capital solely associated with economics, which tend to be income based, and that are used in much public policy research, as can be seen in Chapters 1 and 2. While some economic and policy research refers to human capital, this tends to focus on skills that are directly sought in the labour market, for example qualifications or cognitive skills. Instead, Bourdieu's concepts of cultural and social capital pick up on more subtle aspects of an individual's behaviour, skills and attitudes that are more appropriate when studying in a school environment whereas qualifications are generally obtained at the end of compulsory schooling, meaning qualifications as an indicator of human capital are available only for those who have passed through the education system. Even within the context of social reproduction, the inclusion of social and cultural capital

gives a broader understanding of how individuals gain and maintain a position of privilege when compared to the use of only economic and human capital. This is partly because Bourdieu's concept of capital allows for the non-material advantages individuals can have over their peers that, like economic capital, are distributed by social class. A second subtlety in Bourdieu's concept of capital is that it does not ignore the symbolic activation of capital in society and its meaning within social structures.

There is evidence that inequalities are present at the larger spatial scale of neighbourhood (Rae, 2012), and although few education-focused studies have considered or operationalised the three capitals at the place level, some studies have highlighted their suitability for capturing neighbourhood inequalities. Within the place and health literature, a few studies (Abel, 2008; Frohlich and Abel, 2014) have argued that using all three capitals better captures the "multidimensional effects of social inequality [and] the more complex interactions between cultural, social and economic capital" (Abel, 2008, 13). Bourdieu's three forms of capital also provide a framework by which the relationship between social structural inequality and agency can be considered. For example, it is possible to imagine a place where there are few residents with access to economic, social and cultural capital, and where this larger structural inequality, at the place level, may impact on a resident's behaviour and attitudes, as well as the options available to them over and above their individual access to these capitals. Therefore, considering the contextual capital distribution within a place will better illustrate the structural constraints young people face.

3.1.2 Theory of Reproduction

The theory of reproduction ties together the theory of capital and the school as an institution and in turn, how this affects young people's attainment. Bourdieu believed that the school was the key mechanism for the reproduction of social inequalities caused by both an uneven distribution of cultural capital between families, coupled with the school's

expectation that students will be familiar with the dominant culture (Nash, 1990; Edgerton & Roberts, 2014). As defined in the previous section, the cultural goods and practices of the middle and upper classes of a given society are described by Bourdieu as the dominant culture (Bourdieu, 1986). The school curriculum, as well as the overall functioning of the school, are centred around middle-class knowledge, values, attitudes and behaviours while, to some extent, the school expects all students to hold positive attitudes around the purpose and value of education and the content of the curriculum. This leads to further inequalities as the dominant culture is more accessible to students from the middle and upper classes, allowing them to develop their cultural capital at home and familiarise themselves with the many attitudes, skills and behaviours expected by the school. On the other hand, it is theorised that working-class children are not as familiar with the dominant culture as they have minimal access to this at home. This is not to say that they are completely unaware of the dominant culture, however, their familiarity with it requires additional effort and work as they are not exposed to the dominant culture as frequently or effectively at home. In addition to this, the education system also imposes the dominant culture through the content of the curriculum. This leads to children from the middle and upper classes being able to relate to the curriculum content more easily, with children from the lower classes having less of a cultural 'fit' with the curriculum (Nash, 1990).

Viewed from outside, the school appears to be a place of equal opportunity with the same education available to all, however, Bourdieu argues that it is this view of equality which leads to educational inequality. He claims that:

> *"the education system demands of everyone alike that they have what it does not give. This consists mainly of linguistic and cultural competence and that relationship of familiarity with culture which can only be produced by family*

upbringing when it transmits the dominant culture.' (Bourdieu, 1977a, p. 494)"

(Sullivan, 2002, 145)

It is through this image of a meritocracy that the middle and upper classes can validate and maintain their social position, being seen to deserve their position due to academic success and 'skill'.

Bourdieu then argues that social reproduction occurs through the school when these students exit the education system into the labour market. As schools expect young people to be familiar with the dominant culture, students who comply with the school and its curriculum are rewarded. The dominant culture is institutionalised by awarding exam results. Good exam results are awarded to those who have shown an appropriate understanding of the dominant culture within that subject area, recognising the individual's ability to work well in the school system. The institutionalisation of cultural capital then allows for the easy identification of those both skilled and familiar with the dominant culture, making selection for university or work easier. Through this institutionalisation, social inequalities are carried through from the school into the labour market via these qualifications.

The following section looks at the neighbourhood mechanisms that lead from the economic, social and cultural capital in a place to the behaviours and attitudes of young people, and in turn their education.

3.1.3 Neighbourhood Mechanisms

Neighbourhood mechanisms refer to the pathways and processes that occur within the neighbourhood that alter or effect an individual's actions or attitudes (Galster, 2012). They have been developed and applied across a broad range of neighbourhood effects research that focuses on an array of topics from crime to health to employment. Galster (ibid) identifies four types of neighbourhood mechanism, environmental, geographical, social and

mediating. Environmental mechanisms are the "natural and human made attributes of the local space that may affect directly the mental and/or physical health of residents without affecting their behaviours" (ibid, 25) and commonly include measures such as exposure to violence, decaying housing conditions, air pollution and toxic exposure. Environmental mechanisms have been shown to impact on young people's physical and cognitive development, an example being the exposure of children in Flint (USA) to lead through contaminated drinking water, by which children in more deprived areas were more likely to be exposed to the contamination and in turn impacting the child's intellectual development (Hanna-Attisha, 2016). Geographical mechanisms are also physical and are caused by a neighbourhood's geographical location in relation to other places and services. Geographical mechanisms have been shown to impact on young people's access to public services, including schools. As discussed in Section 2.4 (Education Structure and Schools), the area that a young person lives is an important factor in determining their access to schools due to the use of distance criteria in school admissions (Gibbons et al, 2013) which, in turn, can impact on their attainment. Social mechanisms are the social processes that occur within a place due to the social interactions that take place between residents. They include a variety of mechanisms that involve social contact with neighbours as either face-to-face interaction or stem from the overall social climate of a place. These mechanisms are seen to alter the behaviours and attitudes of young people, in turn affecting their attainment. In the education literature, the educational behaviour of neighbourhood peers, such as dropping out of school, have been found to be related to young people's chances of completing high school (Ginther et al, 2000). Finally, mediating mechanisms come to affect a young person not through direct contact with the neighbourhood or place but through a secondary party, such as through a parent (parental mediation) or institution (institutional mediation). These secondary parties are directly influenced by the place and their attitudinal and behavioural

reaction to place is what influences the young person. For example, deprived neighbourhoods have been found to increase parental stress, leading to the reduced quality of parent-child relationships which in turn is detrimental to child cognitive development (Morrison Gutman et al., 2005).

All four mechanisms have been shown to be connected to young people's cognitive development (Hanna-Attisha et al, 2016; Morrison Gutman et al., 2005; Galster, 2012) or more directly to their educational attainment (Ginther et al, 2000; Galster, 2012). The educational attainment measure that will be used in this study is the Key Stage 2 (KS2) score in maths and English which is a measure of ability that takes into account the curriculum. The neighbourhood mechanisms that will be used in this study are narrowed down to the social and mediating mechanisms as these are the most relevant to young people's KS2 attainment. Social mechanisms connect to both social capital and cultural capital due to the role of social interactions in the production of each of these capitals. Social capital is reliant on social interactions between individuals, while family cultural capital is believed to be transmitted from parent to child through socialisation. Mediating mechanisms are particularly important when considering young people still at primary school as they have less direct exposure to the neighbourhood than adults (Galster, 2007). This thesis will focus on the institutional aspect of mediating mechanisms due to the importance of schools on attainment (Brännstrom, 2008). However, as parental mediation will also be partly accounted for (due to the large amount of data on parent-child relationships and home environment) this thesis will focus on social and institutional mechanisms since these are identified as the most closely linked to a young person's test score. These will be discussed in more detail in the literature review.

Galster and colleagues also recognise the need for further empirical work into both the differing effects of neighbourhoods across residents (Galster et al, 2010; Glaster, 2012) and

individual variation in exposure to neighbourhood. The first suggests that every resident may experience their surroundings differently from their neighbours because of differing individual characteristics (Galster et al, 2010). In addition, variation in exposure to neighbourhoods, whether this is because of the length of time as a resident or because contact with the neighbourhood is buffered by other factors, should also be considered where possible. This is particularly relevant to young people whose experience of their neighbourhood at age eleven is often mediated by their parents, as discussed above.

Literature Review

As this thesis is bringing together family and neighbourhood factors into one theoretical framework, it is necessary to draw upon literature from multiple fields, including education, neighbourhood effects and school effects. This is to gain a better understanding of how family and place can impact on young people's attainment. Additionally, as the research will apply the theory of capital to both the family and place environment, it is necessary to draw upon the literature focusing on family capital to inform its application to place. This section will initially outline the literature on social reproduction, focusing on Bourdieu's theory of reproduction. It will then discuss the literature on economic, social and cultural capital and how these interact. The literature on neighbourhood effects and in particular the mechanisms described in 3.1.3 will be covered before outlining the working hypotheses for this research.

3.2 The Family and Individual

The following sections will discuss the literature on Bourdieu's theory of reproduction, with focus on work looking at economic, social and cultural capital. It will begin by discussing the theory of reproduction before outlining the quantitative and qualitative literature on economic, cultural and social capital, which uses both Bourdieu and Coleman's definitions.

3.2.1 Theory of Reproduction vs Education as Emancipation

Bourdieu's theory of reproduction (as outlined in Section 3.1.2, Theory of Reproduction) suggests that the education system is a key contributor to the reproduction of social class inequalities. Many have been critical of this, highlighting the scale of absolute social mobility within the UK and noting that a large proportion of working-class children have succeeded in school suggesting that the education system is not completely unnavigable by working class

children (Goldthorpe, 2007). Opposing theories would instead suggest that by providing a quality education to all young people, they are provided with what they need to succeed at school. This is consistent with Young's (Young et al., 2014) concept of 'powerful knowledge', whereby access to knowledge through education has an emancipatory role, providing important knowledge that can help young people succeed at school and within wider society. However, Young's work does suggest that although education can be emancipatory, efforts need to be made by teachers and schools to support the teaching of 'powerful knowledge' to working class children.

On the other hand, while there has been increasing absolute social mobility, there has been a relatively consistent attainment gap, as shown in Section 1.1.1 (Socio-Economic Inequalities in Attainment and Basic Skills), suggesting that although there has been widespread educational expansion and increasing numbers of working-class children continuing in education, there remains a social class attainment gap. This alternative theory places too little value on the fact that not all young people begin school with the same support and resources at home, forcing young people from the poorest backgrounds to 'catch up' if they are to have equivalent success (Nash, 1990). Considering both the current inequalities in attainment and the success of a large number of working-class students, it suggests that some middle position is required that recognises that education can be emancipatory yet individuals are unequally equipped within the education system.

Bourdieu's interpretation of the role of education in the reproduction of class position highlights many of the ways that educational institutions can make it more difficult for working class students to do well, yet it allows little room for working-class young people to take advantage of education in improving their class position. It removes the possibility for education to be emancipatory. This brings up the question, if education can only reproduce class positions then why focus so much attention on it to reduce inequality?

This leaves two possible solutions to the situation where education still emphasises the dominant culture. One way to improve young people's outcomes would be to provide working-class students with better access to the dominant culture (Young et al.,2014) while another option would be to change the expectations of the school by being more inclusive, widening the cultural climate of the school and curriculum so that it is more inclusive (Khalifa, 2010; Nash, 2002; Karabel & Halsey, 1976). Therefore, one way that this PhD can develop and contribute to the understanding of reproduction through the school is to identify the scale of the role of parent cultural capital compared to child cultural capital and any dependencies between the parent and child capitals.

3.2.2 Economic Capital

Bourdieu described economic capital as much more than just family income; it should include a range of resources that build on the idea of economic stability including income, investments and property. Within the education literature, economic capital is often represented using proxy measures including whether the child receives Free School Meals (FSM), whether they are from a deprived area and parent occupational grouping (Gorard, 2012; Geyer et al., 2006). In many cases, these proxies are intended to represent one aspect of economic capital, for example, family income or poverty. However, these proxy variables are often flawed in capturing what they intend and alone cannot represent the whole concept of economic capital.

Considering the main components of economic capital - income and financial resources, savings, investments, wealth, property and land - gives us a general guideline of the types of measures to be included.

Only a few studies have used additional data on wealth, over and above income, to look at the effect on a variety of education outcomes. Jez (2014) uses a variable from the National Longitudinal Study of Youths (a representative survey of young people in the US) on net

worth. This value includes information on the value of property and land, savings and investments, minus any debt and money owed. Shanks and Destin (2009) use a similar measure from the Panel Study of Income Dynamics while Huang et al (2010) use a measure of wealth plus income at multiple time points. All of these studies found that wealth had a significant effect on whether students attend college (Jez, 2014; Shanks et al., 2010; Huang et al., 2010). In fact, Shanks and Destin (2010) found that high wealth families (both those with high-income and low-income) have a higher chance of graduating college (roughly 90%), suggesting that wealth, rather than income, is the important economic factor in college completion.

Bourdieu's inclusion of property is particularly important in considerations of economic capital because it is a resource known to separate the working and middle classes and can be passed from one generation to the next, contributing to class reproduction. Furthermore, recent research using Bourdieu's framework supports the importance of owning property in dividing the social classes (Savage, 2015). This is due to both the accessibility of property ownership as well as the security and stability that owning property provides (ibid). Economic capital can be institutionalised through the ownership and inheritance of property (Bourdieu, 1986) and savings. This stability of home ownership and the financial benefits this provides may both have a positive effect on young people's home environment and reduce their parent's financial worries. Additionally, the state maintains these dynamics between the working and middle classes through private property and inheritance laws thus parents can guarantee the economic security of their children by passing property and wealth from one generation to the next.

3.2.3 Cultural Capital

Bourdieu's cultural capital takes three forms: objectified, the cultural objects that can be owned and used; embodied, the internalisation of culture and cultural activities; and

institutionalised, officially recognised e.g. educational qualifications (Edgerton & Roberts, 2014).

The objectified form of cultural capital gives an individual access to physical assets that can be used to develop various culturally accepted skills and is the most similar to cultural resources. Common measures include access to or ownership of books, type of books, musical instruments, art, cultural activities (extracurricular activities) and visits to cultural centres (historic sites, museums, art galleries) (De Graaf et al., 2000; DiMaggio, 1982; Dumais, 2002, 2006; Sullivan, 2001; Tramonte & Willms, 2010; Kaufman & Gabler, 2004; Dumais & Ward, 2010; Barone, 2006; Jæger, 2011; Teachman, 1987). Access to objectified cultural capital can provide the resources that make way for the development of an individual's embodied cultural capital, such as attitudes and behaviours, as well as support the production of institutionalised cultural capital.

Embodied cultural capital is the way in which we internalise cultural practices and tastes. This embodiment of cultural practices is developed through familiarity with the dominant culture as well as understanding the appropriate cultural practices in a given time and place. For example, the dominant culture could be expressed linguistically (through a broad vocabulary, appropriate accent), physically (through gestures and poise), or attitudinally (by holding the attitudes accepted by the culture, such as believing that higher education is worthwhile or that Shakespeare was a great playwright) (Lamont & Lareau, 1988). Some studies have tried to capture the more elusive and less easily quantified embodied cultural capital, using measures such as children's attitudes towards school and reading, occupational and educational aspirations (Tramonte & Willms, 2010; Edgerton et al., 2008) and parent expectations (Dumais, 2002, 2006; Tan, 2015). Farkas et al (1990) included behavioural measures, identified through teacher surveys, which aim to distinguish whether the child has the embodied cultural capital that the school expects.

Institutionalised cultural capital results from an institutions' formal or informal judgement of an individual's skills, attitudes and behaviours (Bourdieu, 1986) within the accepted cultural frame set by the dominant class and culminating in educational qualifications. It is generally accepted that qualifications represent an individual's skills and knowledge in a given field. However, Bourdieu would argue that institutionalised cultural capital also captures the competence of an individual to 'fit' with the culture of the institution (Lareau and Weininger, 2003). Parent education is another limited measure of cultural capital that was used in Bourdieu and Passeron's (1990) initial work on cultural capital and reproduction. This measure assumes that parent institutionalised cultural capital can capture the concept of cultural capital as a whole. However, DiMaggio (1982) found that there was a low correlation between parent education and access to objectified cultural capital, suggesting that this is not the case. Few studies have continued to use this as the main measure of family cultural capital, and when they have this has primarily been due to a lack of data on other aspects of cultural capital (De Graaf & Kalmijn, 2001). Instead, most studies have utilised parent education as just one aspect of the cultural capital (parent institutionalised cultural capital) available to children within the home (Barg, 2015; De Graaf et al., 2000; Dumais, 2006; Sullivan, 2001; De Graaf, 1986; Tramonte & Willms, 2010).

Qualitative studies using the concept of cultural capital have identified its activation by parents and children in a number of situations including parent-school interactions (Lareau and Horvat, 1999; Lareau, 1987; Miller et al., 2014), parenting styles (Lareau, 2002; Kimelberg, 2014) and within the classroom (Khalifa, 2010; Nash, 2002). Lareau and Horvat (1999) found racial and class disparities in whether parents' interactions with the school were considered appropriate. It was found that teachers believed that interactions with middle-class white families were carried out in a more 'appropriate manner', what was considered a 'polite interaction' (ibid). In addition to this, black families often felt that the school did not

put enough emphasis on black culture, suggesting that it was harder for black children to feel comfortable with the curriculum (see also Khalifa 2010). This ability for young people to 'fit' with the curriculum as well as the behaviours and attitudes of the school is also highlighted in the work of Nash (2002) who found that children from working class backgrounds were less able to relate to both the content of the curriculum and the ways that the curriculum is taught. Finally, Lareau (2002) found a distinction between the style of parenting used in middle- and working- class families. She describes the child rearing of middle-class parents as 'concerted cultivation' where they were seen to make a deliberate and sustained effort to stimulate children's development and to cultivate their cognitive and social skills. On the other hand, working-class parents tended to opt for 'natural growth' emphasising spontaneous development. This suggests that detailed information on parenting style can also be drawn on to gain a better understanding of family cultural capital.

Sullivan (2001) made the distinction between two types of objectified cultural capital, 'verbal and literary' compared to 'visual and musical'. After analysing the results of a regression of cultural capital on attainment, Sullivan used factor analysis to see whether there were different types of cultural capital. This resulted in two groupings, one that contained cultural capital that developed verbal or literary skills, and one that developed visual or musical skills. The argument continues that the 'highbrow' forms of capital, represented in the visual or musical group, do not develop useful skills for use throughout the whole education system, while the verbal or literary forms help to develop literacy and communication skills, relevant to all aspects of school life (Kingston, 2001). In this case, it can be seen that the verbal and literary forms of objectified cultural capital are converted into embodied cultural capital, skills that can be utilised within the school.

De Graaf and colleagues' (De Graaf et al., 2000) study undertaken in the Netherlands found that parent reading habits had a larger impact on attainment than their participation in

traditional cultural activities such as going to the theatre or visiting museums (termed by De Graaf as beaux arts participation), reflecting the findings of Sullivan (2001). They believed that this can be attributed to two mechanisms, the 'educational skills' and the 'educational affinity' explanations. The 'educational skills' mechanism refers to parents with more frequent reading habits being better able to support their child with their learning at home, providing a more "stimulating home environment" (ibid, 107). The 'educational affinity' explanation suggests that homes where parents read more are likely to have an affinity with the cultural climate of the school, giving these children an advantage within the education system.

Analysis undertaken across OECD countries of the relationship between cultural capital and attainment (Tramonte & Willms, 2010) also made a distinction between traditional 'highbrow' cultural activities and objects (referred to as 'static cultural capital') and 'relational cultural capital'. Relational cultural capital included activities that the parent was directly involved in, such as whether parents discussed books or politics with their child. Although 'relational cultural capital' did not include a measure of reading frequency, it did suggest that cultural capital which impacts attitudes, behaviours and skills is more important for attainment than participation in 'beaux arts' or 'highbrow' activities that requires less active engagement.

While concerns have been raised about the role of schooling in the reproduction of social inequalities (see Section 3.2.1, Theory of Reproduction vs Education as Emancipation), other criticisms have been directed more specifically at the role of cultural capital within this mechanism. Bourdieu (1986) theorised that the dominant culture of the middle and upper classes was arbitrary in nature and was dependent on the cultural practices of the middle and upper classes within a given society. The arbitrariness of cultural capital plays an

important role within the theory of reproduction in that it makes the school's dominant culture and creation of knowledge unjustifiable.

Bourdieu's initial work on cultural capital was undertaken in the 80s in France and many have pointed out that the highbrow culture of the middle and upper classes in France is not transferrable to current middle-class culture either in or outwith France (Lamont & Lareau, 1988; Kingston, 2001). Kingston (2001) continues by arguing that there is no single dominant culture within Western societies, as the practices of the middle classes have become broader and on occasion adopting working class cultures. Without the dominant culture, Bourdieu's theory of reproduction fails as it would not be possible for the school to expect certain social cues and knowledge, ultimately meaning that student's social classes would not be visible through their beliefs, behaviours and knowledge. The lack of suitability of the dominant culture is also acknowledged in the work of Lamont and Lareau (1988), who suggest that further research is required into what cultural practices act as social class signals within the education system.

Savage's (2015) analysis of the distribution of capital in the UK would suggest that there are distinct types of cultural capital with variation between social classes, identifying two clear cultural divides. The first being activities undertaken within and outside of the home, with low income and low educated individuals being less likely to take part in cultural activities outside of the home (ibid). The second identifies a split within the types of activities participated in, with younger individuals having a broader range of activities, which he terms 'emerging cultural capital', outwith the common highbrow conceptualisation (as discussed above). They argue that it is this ability to understand a broad range of cultural activities that distinguishes middle class culture in the UK with young middle-class individuals being able to engage in cultural activities ranging from opera to video games. Therefore, arguments against the dominant culture are correct in asserting that the highbrow activities associated

with Bourdieu's original conception of cultural capital are flawed, however, this does not mean that there is no usefulness in the concept of cultural capital. The operationalisation of this broader interpretation of cultural capital will be discussed in more depth in Section 3.2.6 (Operationalisations of Capital).

The second concern mounted against cultural capital is that the dominant culture is not arbitrary, in fact it is useful in many ways, helping individuals to understand and interact with the modern world. As mentioned earlier, Young (Young et al., 2014) contends that not all knowledge is arbitrary, instead knowledge can be used in an emancipatory manner. Nash (2002) who utilises Bourdieu's cultural capital in his qualitative study also identifies that some of the knowledge and skills that are crucial to learning in the education system have a value in the external world and do not act merely as social cues. For example, the self-discipline required to get through the school day is something that is required by adults of all social classes in the workplace. This again draws on the argument discussed in Section 3.2.1 (Theory of Reproduction vs Education as Emancipation), that although the education system is one way in which social class inequalities are reproduced, it is also possible for the education system to have an emancipatory effect if deprived young people are able to engage with the knowledge and skills expected by the school. Therefore, this research accepts that it cannot distinguish between the arbitrary and non-arbitrary cultural practices found within the education system, however, it will use this broader conceptualisation of cultural capital to capture a range of cultural practices, attitudes and behaviours that go beyond the highbrow measures initially used by Bourdieu.

Finally, considering these concerns both with cultural capital and their theorised role in social reproduction Goldthorpe (2007) calls for the use of the less theoretically loaded concept 'cultural resources'. Cultural resources are similar to the objectified form of cultural capital in that they are the physical assets that can be used to increase human capital

(qualifications and the associated skills). One of the key weaknesses is that these resources exclude non-physical assets and this study wishes to capture cultural capital in its broadest sense, including embodied cultural capital. Therefore, cultural resources are not suitable for this task.

3.2.4 Social capital – Bourdieu and Coleman

While interest in social capital has grown in the last fifteen years, much of the work has focused on 'group' social capital in terms of communities, neighbourhoods and organisations. As this thesis wishes to understand the individual and place level effects of social capital, it will draw on the theories used at both of these levels. At the individual and family level consideration will be given to work stemming from Bourdieu's theorisation of social capital in 'The Forms of Capital' (1986), as well as work that focuses on social capital within families (Coleman, 1988). Putnam's (2001) work is most prevalent in the place-based literature and this work will be expanded upon in Section 3.3.1 on social mechanisms in the neighbourhood.

In the 'Forms of Capital', Bourdieu theorises social capital as "the aggregate of the actual or potential resources which are linked to possession of a durable network" (Bourdieu, 1986). For Bourdieu, social capital belongs to the individual, rather than the group or network, and the value of an individual's social capital is dependent on both the size of their social network and the capital available to those within that network (ibid). Therefore, any measure of social capital should try to capture both the scale and value of social networks.

Bourdieu's fundamental view of social capital was as an asset primarily available to the elite, those with economic capital and members of privileged social groups (Field, 2003). Consequently, these privileged individuals were theorised to gain social power by using their valuable, capital rich, social networks. Bourdieu theorised that individuals can use their social capital in two ways, to advance their own position or to exclude others from access to this

social network. It is through exclusion that these networks are able to maintain an elite nature, limiting those allowed 'within' the network and excluding individuals from less advantaged groups.

Unlike Bourdieu, Coleman considered social capital to be attributable to a community or group. Of particular relevance is Coleman's work on social capital in the school community and within the family. His interpretation is functionalist in definition (ibid):

> *"Social capital is defined by its function. It is not a single entity, but a variety of different entities having two characteristics in common: they all consist of some aspect of a social structure, and they facilitate certain actions of individuals who are in the structure." (Coleman, 1994, 302 in Field, 2003, 29)*

The boundary of what is and is not social capital depends on what aspects of a community facilitate positive actions. It is clear that unlike Bourdieu's definition, Coleman's social capital is seen only as a positive social force due to its function to facilitate positive actions.

Coleman's work focused on poor inner-city communities in the United States (Field, 2003), where he believed strong community links, what he termed social capital, could improve student performance and reduce dropout rates. As Coleman's work was situated in poor communities, it is clear that Coleman believed social capital to be a resource accessible to everyone. Indeed, he found social capital to be an important factor in improving outcomes for these students, irrespective of the economic capital available to them (Coleman, 1988). In line with this, Coleman (1988) believed that social capital benefited the whole community (neighbourhood or school) irrelevant of whether the individual in question was directly involved in the social network.

While it is extreme to assert that social capital is primarily available to the elite (Bourdieu's stance), the same is true of Coleman's belief that social capital works only as a social good.

Bourdieu's theorisation does not preclude that those from more disadvantaged backgrounds can have access to social capital. While we can recognise the strength of the elite's social capital in excluding outsiders, it is also important to recognise that social networks are available to everyone, yet not necessarily providing social capital of the same value. On the other hand, Coleman's theorisation ignores how social networks, and the social norms associated with these, can exclude individuals. It misses the way in which social connections can be exploited by the wealthy (as suggested by Bourdieu) and other homogeneous groups (for example religious or ethnic groups (Field, 2003)), both consciously and unconsciously, to monopolise. Therefore, this thesis focuses on the middle ground between these two positions.

Bourdieu's theorisation of social capital has not been used in many quantitative studies. Behtoui and Neergard (2016) studied the relationship between parent and child social capital on young people's school attainment and educational aspirations. They found that parental socio-economic background was the main determinant of a child's access to social capital and this 'extra-familial' social capital (both parent and child networks) contributed to increased educational attainment (ibid). These findings are important in informing how social class and the quality of individual social capital are linked.

Coleman's conceptualisation of social capital is most often utilised in the quantitative education literature. His measures pick up on three key themes, parent-child social capital, family-school social capital and the social structures or environments that generate the shared norms, trust and sanctions that Coleman deemed necessary for the facilitation of social capital.

Family or parent-child social capital refers to the parent-child relationships and norms developed within the home that can be used to nurture child development and encourage

educational success. In particular, it is theorised that within-family social capital plays a role in converting parent human capital, or in our case parent cultural capital, for use by children:

> "*Social capital within the family that gives the child access to the adult's human capital depends both on the physical presence of adults in the family and on the attention given by the adults to the child."* (Coleman, 1988, 111)

Coleman states that parent-child social capital requires parents[22] to be present and there must exist a relationship between the parent and child. Coleman (Coleman, 1988; Hoffer, 1986) found that within-family social capital (as measured by single-parent family status, whether the mother worked during early childhood and whether the child talks to parents) had a positive effect in reducing drop out from high school. Other studies have also found that within-family social capital has a positive relationship with a range of educational outcomes including reducing school dropout (Teachman et al., 1996, 1997), educational attainment (Von Otter & Stenberg, 2015; Hao & Bonstead-Bruns, 1998; Sun, 1998) and educational expectations (Hao & Bonstead-Bruns, 1998).

Family-school social capital is that developed between the family, specifically the parent, and the school allowing for a shared understanding of the school's educational values and norms. Family-school social capital tends to focus on parent involvement in school activities and their child's education, such as attending parent meetings and participating in the PTA (Coleman, 1988). Dumais (2006) finds that when parents do not have a good relationship with the school there is a negative effect on their child's educational attainment. This distinction of within-family and family-school social capital is useful for this research as it makes a distinction between the different situations in which social relationships can help a child's educational development.

[22] Coleman's perceptions about parent or carer presence are routed in the family values of the 80s when his research was undertaken, with an emphasis on the nuclear family.

The final theme is the environment believed to facilitate social capital. Coleman believed that this transformation of social capital into positive outcomes was only possible in a society with high levels of trust, reciprocity, shared expectations and effective (positive educational) social norms that could function to sanction individuals when appropriate (Plagens, 2011; Johnston & Percy-Smith, 2003; Portes, 1998). The environment suitable for social capital in its broadest conception could include the two previous themes, as they measure home and school environments. In a more particular sense, Coleman included specific environments that he believed were conducive to the development of social capital, such as attending a Catholic school or religious service. Coleman also believed that for the social norms imposed by parents on their children to be effective, it is necessary that there be intergenerational closure [23] developing norms that permit trust, expectations, obligations and sanctions. It should be noted that intergenerational closure is a very particular way to measure shared norms between families in a school community. Shared norms between students and parents could be measured in various ways that identify common beliefs, behaviours and attitudes. For example, Behtoui and Neergaard (2016) ask young people about their friends' attitudes to education.

Coleman has been widely criticised for a lack of clarity in what social capital in fact is (Dika & Singh, 2002; Morrow, 1999; Portes, 1998). This lack of clarity could be partly attributed to his functionalist definition, previously described, where social capital can take different forms depending on the community under question, thus making it difficult to pin down and measure. This will be discussed in more depth in Section 3.2.6, operationalisations of capital.

[23] Intergenerational closure occurs when there is closure between children within a school, between parents and their children but also between the parents of the child's peers (Coleman et al., 1982a; Coleman, 1988)

3.2.5 Interactions between the three forms of capital

As discussed in the theoretical framework, the different forms of capital can be transformed from one form to the other. However, Bourdieu (1986) claims that economic capital is the root of both social and cultural capital as the transformation between economic capital and social or cultural capital is easier than the reverse transformation. This suggests an interesting link between these capitals, one that has not been investigated thoroughly and which conflicts with alternative accounts of social and cultural capital that emphasise their accessibility to all.

Some studies have found interaction effects between two types of capital. Edgerton et al (2008) found that parent aspirations were more useful to low rather than high SES students. While many studies focus on one form of capital, and at most include an economic variable as a control, few studies have analysed all three forms of capital and their intersection.

One exception is Savage (2015) who considered the distribution of the different forms of capital in their seven-category social class structure. This highlighted that different classes had different distributions of capitals and only the 'precariat' [24] had low levels of economic, social and cultural capital. While different social groups have access to more or less of each capital, whether the capital was equally effective is not investigated. The question remains as to whether there are interactions between capitals, making them more effective in influencing educational attainment. Therefore, this thesis investigates the effectiveness of these interactions between capitals, particularly between economic and both cultural and social capital.

[24] The category precariat is defined by their lack of economic, social and cultural capital as well as their precarious existence due to financial, employment and housing instability. See Chapter 10: The Precarious Precariat in (Savage, 2015)

3.2.6 Operationalisations of Capital

This section discusses in more depth the ways in which economic, social and cultural capital have been operationalised within the quantitative literature. In some cases, proxy measures have been the prime method by which capital has been operationalised, often due to a lack of suitable variables in the data. In other cases, the measures first operationalised by Bourdieu and Coleman have been updated and made more sophisticated, utilising survey data and unique methods.

As discussed in Section 1.1.1 (Socio-Economic Inequalities in Attainment and Basic Skills), there are clear inequalities in school attainment by Free School Meal status and occupational class, with both measures often being used as proxy measures for family income. Recent empirical work has shown that these common proxy measures for income, as used in the education literature, are not without problems. For example, Geyer and colleagues (2006) found that income and occupational class are not interchangeable, while Hobbs and Vignoles (2010) suggest that FSM does not capture all of the poorest students[25]. However, to some extent these variables capture some aspects of economic capital. FSM captures a part of the school population that institutions recognise as being 'deprived' while occupational classifications capture the status of an occupation. Therefore, although measures such as occupational class and FSM cannot effectively capture income alone, they may contribute to our understanding of a child's access to economic capital.

Reflecting on the studies reviewed in section 3.2.2 on the economic capital literature, it is clear that wealth, over and above income, is an important predictor of college attendance

[25] FSM eligibility is dependent on parents making a claim for FSM, which may or may not be taken up in the long term. Students who would be eligible (aka their parents claim benefits) but who do not make a claim for FSM, are not included in the category eligible for FSM (Hobbs & Vignoles, 2010). However, Gorard (2012) concludes that it is a useful measure of disadvantage even if it is not a good proxy for income.

(Jez, 2014; Shanks et al., 2010; Huang et al., 2010). Additionally, Savage's (2015) findings support the idea that not just income and wealth make up economic capital but also property and housing, re-emphasising the multidimensional nature of economic capital and advantage. It can be concluded that if the aim is to capture a well-rounded measure of economic capital a selection of indicators is best.

Operationalisations of Bourdieu's cultural capital have at times been limited with much of the research having a narrow interpretation that unites only the objectified form of cultural capital with a distinct conceptualisation of the dominant culture, creating what Lareau and Weininger (2003) term "highbrow" culture. The results of these studies vary with some finding that there is a significant effect on educational attainment (DiMaggio, 1982), while most have found it to have minimal effect when other variables were taken into account (Dumais, 2002, 2006; Tramonte and Willms, 2010). Additionally, research has highlighted the importance of embodied cultural capital (Lamont & Lareau, 1988) and studies that have included it have found that it has a larger impact on educational outcomes than objectified cultural capital (Tramonte & Willms, 2010; Sullivan, 2001).

Limiting the measurement of cultural capital to this highbrow interpretation would restrict this thesis in two ways. Firstly, they constrain our understanding of the dominant culture in that, with too much emphasis is placed on traditional 'highbrow' activities, the dominant culture in much of the current Western world is not truly reflected (Edgerton & Roberts, 2014). Secondly, the use of fewer measures could cause model misspecification, where a highbrow measure may act as a proxy for other underlying behaviours, attitudes (embodied cultural capital) or institutional expectations (institutionalised cultural capital). In these operationalisations, the variables tend to measure only objectified cultural capital and are similar to human capital, neglecting the more subtle aspects of cultural capital associated

with the embodied form. Therefore, it is necessary to include all three forms of cultural capital.

Additionally, Bourdieu's own operationalisation of cultural capital (Bourdieu & Passeron, 1990) was weak, relying purely on parental education. As discussed in Section 3.2.3 on the cultural capital literature, this measure of cultural capital has tended to be used when data is scarce, while empirical work suggests that parental education is not a good predictor of objectified cultural capital (DiMaggio, 1982).

To enhance the measurement of cultural capital, this thesis will be guided by the theorisation that highlights all three forms of cultural capital at the family level, testing their impact on educational attainment. This requires rich data on family and cultural activities. Recognising these multiple forms of cultural capital also makes a clear distinction between cultural capital, cultural resources and human capital. It varies in two ways; it allows for a broader understanding of a resource that includes non-physical items (such as behaviours, attitudes and experiences) and its symbolic activation (concerted cultivation and ability to fit in). It also rejects previous operationalisations of Bourdieu's work that use parent qualifications alone or 'highbrow' measures of culture that are constrained by their objectified nature and interpretation of the dominant culture.

Bourdieu's theorisation of social capital has not been used in many quantitative studies although a unique method has been developed to assist operationalisation. The Lin Position Generator Method aims to account for the scale and value of an individual's social network, in turn estimating their social capital. This method uses three indicators; the quality of relationship; the highest occupational prestige score of their connections; and the range of prestige scores found within their social network (Lin & Dumin, 1986, 372). This method can

be altered, depending on the study population, by modifying the occupations individuals are asked about as a means to reflect the 'elite' and low-class occupations of that society.

Studies using this method have found variation in social capital by social class. It was found that those in the most prestigious occupations were more likely to know people in other prestigious occupations (such as doctors, lawyers and CEOs), while those from the least prestigious positions (machine operators and cleaners) are less likely to know people in these occupations. This was also intergenerational with those born into an elite family, on average, being likely to know 2 fewer people working in a routine or semi-routine occupations than those born to parents in routine occupations (Savage, 2015). Behtoui and Neergaard (2015) applied the Position Generator method to a model of educational attainment. They found that parent social capital has a significant positive relationship to children's attainment. While this method is very useful for generating a numeric value to an individual's social networks, few datasets have gathered such information, giving further reason to draw on Coleman's alternative operationalisation of social capital.

Coleman's within-family social capital relates to the relationships built between parents and children that can help them at school. Within empirical research, the most unambiguous and direct measures have used information on parent-child communication time and quality (Teachman et al., 1996, 1997; Von Otter & Stenberg, 2015; Hao & Bonstead-Bruns, 1998; Sun, 1998; Yan, 1999; de Souza Briggs, 1998). Other proxy measures (e.g. number of siblings, lone parents and whether the young person's mother works) have been used to represent parent-child relationships, focusing on family structure and inferring from this the amount of time that parents have to spend with each child (Teachman et al., 1996, 1997; Coleman et al., 1982a; Bianchi & Robinson, 1997; Sun, 1998). Most studies have found that direct measures have a positive impact on educational outcomes and young people's behaviour,

while proxy measures have a varied effect, possibly due to their inability to accurately capture the parent-child relationship.

Family-school social capital focuses on parent's interactions with the school. Measures include whether parents have attended both formal (parents' evenings, parent-teacher meetings, PTA) and informal (volunteered for school events or trips) interactions with the school. After finding that the number of times parents meet teachers has a negative relationship to attainment, Behtoui and Neergaard (2015) note that meetings with teachers could be capturing negative relationships with the school rather than positive ones, with parents being asked to meet more frequently with teachers if their child is struggling, either academically or behaviourally. Therefore, measures of school interactions such as regular parents' evenings may be a better measure of family-school social capital.

The environment of shared norms and values, that Coleman believed to be conducive to social capital, were initially operationalised by Coleman through the concept of intergenerational closure. Due to Coleman's policy influence, this became a popular measure of shared values in the US, with large-scale surveys gathering data on whether parents know their child's friends and the child's friends' parents. Information on intergenerational closure is not often collected in the UK however, some studies have gathered information on young people's friends including their norms and values.

One of the key weaknesses in Coleman's social capital theory is its operationalisations which vary throughout his work, defining social capital alternatively as the environment in which social capital is best generated, its outcomes, and even the organizations that are an appropriate background for its development (Fine, 2018). As the environmental and organisational measures used by Coleman are in fact the conditions under which Coleman believed social capital to be effective, there are few direct measures of community social capital. This does not mean that they are not useful measurements of the environments that

facilitate individual level social capital, they just do not measure some shared form of community social capital. Portes (1998, 20) makes clear that future community level measurements of social capital must 'observe certain logical cautions: (...) separating the definition of the concept, theoretically and empirically, from its alleged effects (...) controlling for the presence of other factors than can account for both social capital and its alleged effects'. Taking this into account, an aim will be to measure the environmental situations found within the community and home. Such measurement will allow an understanding of how neighbourhoods and family environments can enhance or inhibit the development of social capital as well as attainment.

In light of the broad scope of the three forms of capital in theory (as outlined in Sections 3.2.2 to 3.2.4 that focused on the literature on each of the capitals), it is clear that a number of factors are required to capture this quantitatively. Considering previous operationalisations, a gap that this thesis addresses is to use a broad understanding of capital. Additionally, looking at the use of proxy variables in current operationalisations, it is evident that access to suitable data is one of the main restrictions to capturing the three capitals well.

3.3 Place and Neighbourhood

This section discusses the literature on neighbourhood mechanisms and how the three capitals can be captured at the place level in quantitative research, linking together Bourdieu's theory of capital and place. The social and mediating mechanisms outlined in the theoretical framework are expanded, narrowing down the focus to four social mechanisms (relative deprivation, competition, collective socialisation and social capital) and two mediating mechanisms (schools and parents). The empirical literature on place, including investigating the places that matter to families and young people and how these have been operationalised in the quantitative literature is then outlined.

3.3.1 Social Mechanisms

Social mechanisms "refer to social processes endogenous to neighbourhoods" (Galster, 2012, 25). These may arise from face-to face interaction or stem from the overall social climate of a place.

Relative deprivation, competition and economic capital

Relative deprivation and competition theories suggest that individuals change their behaviour or attitude due to the differences that they perceive between themselves and their peers or neighbours (Brännström, 2008). Relative deprivation implies that those who are more deprived, in comparison to their neighbours or peers, view their position more negatively. This is then hypothesized to reduce an individual's positive educational attitudes and aspirations due to their reduced self-perception. Competition theories suggest that in highly deprived areas, residents are forced to compete for scarce resources which, in the case of education, may include institutions (such as schools and libraries) or cultural capital such as highly educated neighbours and peers. This can result in a negative impact on residents as

resources are thinly spread (Galster, 2012). This section argues that this is most relevant to economic capital.

From the neighbourhood effects literature, Ginther et al (2000) found that it was the family income relative to their neighbours [26] that had the biggest effect on young people's completion of high school and years of learning, not the proportion of neighbours that had a high or low income. This finding, suggesting the presence of relative deprivation, was also reflected in Kauppinen's (2007) study, carried out in Helsinki, which found that high-status residents had a negative effect on low-status residents' educational attainment. It may be the case that economic capital is the most visible of capitals within the neighbourhood and should be utilised at both the individual and place level to operationalise relative deprivation and competition theories.

Social Contagion, Collective Socialisation and Cultural Capital

Relative deprivation requires individuals to be aware of their position within the social structure of the place. In contrast to this, social contagion and collective socialisation suggest that individuals unconsciously take on similar attitudes, behaviours and beliefs to those around them, in particular those in their neighbourhood or school (Galster, 2012). Social contagion theory assumes that individuals' attitudes, behaviours and beliefs can change if they are exposed enough to those of others. A similar yet distinct mechanism is collective socialisation. Unlike socialisation within the home, collective socialisation occurs within the wider neighbourhood where individuals are encouraged to conform to local social norms (ibid, 25). Therefore, it is hypothesised that in areas where individuals value education, have high levels of attainment, high aspirations and behaviours that match what the school

[26] Ginther et al (2000) creates a new measure that is the difference between family income and median area income to represent this gap between family and place economic capital.

expects (higher embodied cultural capital) then individuals who would otherwise have different behaviours will conform to those of the rest of the group. Collective socialisation can work in two ways. In more affluent or well-educated areas it provides children with positive role models and educational expectations (Galster et al., 2010). On the other hand, this can also work in reverse, promoting 'deviant behaviour' or negative educational attitudes. In more deprived areas, where fewer individuals continue in education, have lower educational aspirations and role models who continue in school, collective socialisation works to transfer these more negative educational attitudes and behaviours (Galster & Santiago, 2006).

Of these two theories, collective socialisation is more appropriate for research into young people's attainment. Social contagion assumes an individual already has their own set of developed beliefs and attitudes, but this is not necessarily the case with primary school children. In contrast to this, collective socialisation is more likely to be an important mechanism for the transfer of positive educational attitudes and aspirations (embodied cultural capital) to young people, particularly for those who would not otherwise be exposed to these middle-class educational ideals at home. For young people whose parents share these cultural attitudes and behaviours of the school, collective socialisation in the neighbourhood may work to further reinforce these norms.

Many studies of collective socialisation look only at whether a neighbourhood is deprived or not (a binary option) instead of measuring the level of deprivation. Some studies have considered the educational attainment of neighbours, and although this has not been conceptualised as cultural capital in their analysis, it is a measure of the cultural capital of the young people and adults in the area. To reflect the negative and positive educational attitudes found in neighbourhoods, some quantitative studies have focused on positive educational measures, such as highly educated neighbours (Kauppinen, 2007), while it is also

possible to use inverse measures such as the number of school dropouts[27]. Kauppinen (2007; 2008) uses a measure of peer education, the proportion of over-15's in the neighbourhood population having completed at least secondary education, finding it the strongest predictor, at the neighbourhood level, of the type of high school completed (vocational or upper secondary) [28]. Of all the measures used in their 2007 study, the proportion of over-15's in the neighbourhood population having completed at least secondary education is the closest variable to the dependent variable, young people's completion of secondary education. This could mean that young people's attainment is influenced by what and how other young people in the neighbourhood achieve. This highlights that peer education level should be included in the model and also suggests that measures of cultural capital in the area are important in understanding how neighbours can influence young people's educational attainment. Although, these measures, described above, are attributed to the mechanism of collective socialisation, they are measures of cultural capital and not the mechanism underway. For example, it is not determined whether improvements in educational attainment are attributable to changes in behaviours or attitudes, or increased knowledge about the education system. However, these measures can explain the findings of these studies and are reasonable proxies.

While these studies have highlighted that having higher proportions of educationally successful neighbours and peers (neighbourhood cultural capital) improves young people's own attainment (Jencks & Mayer, 1990), how collective socialisation affects young people is unclear. Does it work by altering young people's educational aspirations or attitudes? Or does it influence their behaviours either within the school or in their ability to learn? A few studies

[27] Ainsworth (2002) uses this measure at a school level to look for negative role model effects. It could be the case that a similar mechanism is in place in the neighbourhood due to the link between schools and neighbourhoods.

[28] Other measures included the proportion of white collar workers and those with a middle-high gross income (Kauppinen, 2007)

have broken down these mechanisms further looking at how neighbourhood composition effects young people's behaviours and attitudes, and in turn, how these impact on education. Ainsworth (2002) found that the more high-status residents in a neighbourhood, the more time young people spent on homework and, in turn, the higher their maths and reading scores. This suggests that young people's educational behaviours are being influenced by the make-up of the neighbourhood in turn affecting young people's attainment in reading and maths. Where possible, these pathways should be investigated.

Social cohesion, control, capital and networks

The mechanisms of social cohesion, social control and social capital, all revolve around the similarity of neighbours' norms and beliefs. While these mechanisms have similarities, they do not all relate equally well to the outcome of interest for this research. Social cohesion is best understood as the community norms, values and structures enveloping residents' behaviours (Galster, 2012, 37), uniting them in common goals through the social organisation of a neighbourhood. Unlike collective socialisation, social cohesion is what is theorised to occur when individuals have the same beliefs, behaviours and norms, rather than the process of coming to have the same behaviours, beliefs and norms. When individuals are united through the same ideals society is theorised to function more smoothly and to support individuals in adhering to these norms. Coleman (1982b; 1994) also emphasises the importance of shared norms and values for the facilitation of social capital as well as to support young people in education. Like social contagion and collective socialisation, these norms could be ones of social disorder or even criminal behaviour, but for educational attainment must be ones that value education and set a positive environment for child development.

Social control theory suggests that high-status members of the community enforce mainstream values, norms and behaviours on their neighbours (Galster, 2012). While little work has considered the direct impact of highly educated members of a community on attainment, social control is frequently discussed in neighbourhood crime research. This work looks at how negative or antisocial behaviour can be discouraged in neighbourhoods where adults (either in formal or informal positions) interrupt or prohibit this behaviour, through either direct intervention in or attitudes towards what behaviour is appropriate (Bazemore, 2001; Johnson et al., 2000). As few elite adults in a community directly intervene, rewarding or sanctioning educational behaviour, social control seems an unlikely mechanism to affect young people's educational attainment directly. It is more likely to have an indirect effect, reducing anti-social and disruptive behaviour leading to an improvement in the quality of life for everyone in the neighbourhood (Dubow et al., 1997).

Social cohesion assumes, particularly in Coleman's theorisation (Coleman, 1988), that those with similar beliefs and norms make young people more able to succeed at school, suggesting that similarity breeds better attainment. This perspective dismisses possible 'role model' effects between children who have differing characteristics, as well as suggesting that diverse neighbourhoods are likely to hinder educational attainment. Therefore, neither social cohesion nor social control seem appropriate when considering the dependent variable, Key Stage 2 score. This leaves area social capital and networks as providing a connection for individuals within a neighbourhood.

Neighbourhood social networks are the connections individuals have within their neighbourhood while social capital is comprised of the capital available to each individual they are connected to. Social networks are a pathway for information and knowledge to travel and, under the correct circumstances, for example where there is trust between network members, allows for social support. Most studies have focused on how these

networks can allow for the transfer of information about job opportunities. However, these networks could equally be utilised to transfer knowledge about school quality, in turn affecting parental school choice and knowledge about educational opportunities in the area, something highlighted in the qualitative research in this field (Croft, 2004; Devine, 2004; Savage, 2015). The social support offered through social networks can also help parents with practical matters such as childcare and transport while providing emotional support which can buffer distressing or stressful environments for parents and for children (see parental mediation in Section 3.3.2 on mediating mechanisms).

Putnam also outlines an important distinction between two types of social capital, 'bridging' and 'bonding' social capital (Putnam, 2001). Bonding (or exclusive) social capital tends to reinforce exclusive identities and homogeneous groups (ibid) and is good at connecting people that have something in common (Geys & Murdoch, 2008, 2010). Bridging (or inclusive) social capital is better for linking people to assets and information that otherwise may not be available to them (Putnam, 2001). It can bring together people who are not alike, for example, those that may differ in social class, religion, age or ethnicity. Granovetter (1973) also makes a distinction between types of social ties that link people in a network: strong and weak ties. It is theorised that in more diverse or mixed areas young people from deprived families will gain more opportunities to create weak (or bridging) ties due to more frequent contact in the neighbourhood. These weak ties can provide a unique opportunity for young people, particularly those in disadvantaged families, to meet individuals dissimilar to themselves, who may open opportunities or act as a role model. On the other hand, young people surrounded by many strong, or bonding, social ties may have a large and reliable network for social support (Klebanov et al., 1994).

3.3.2 Mediating Mechanisms

Mediating mechanisms come to affect a young person not through direct contact with the neighbourhood or place but through a secondary party (such as a parent or institution). These secondary parties are influenced by the neighbourhood or place directly and their attitudinal and behavioural reaction affects the young person.

Parental mediation occurs when a young person is indirectly affected through their parents by the place where they live (Galster & Santiago, 2006; Klebanov et al, 1994), particularly in the earlier years of childhood where there is less unmediated contact with the neighbourhood environment (Chase Lansdale et al, 1997; Galster, 2007). Examples from the literature suggest that deprived neighbourhoods cause parental stress and in turn reduce the quality of parent-child relationships (Morrison Gutman et al., 2005) to the detriment of child behavioural and cognitive development. In contrast to this it has been suggested that parent's behaviours and attitudes can act as a buffer (Sykes & Musterd, 2011) to neighbourhood environments. This means that parenting styles and parent support could counteract negative neighbourhood effects on educational attainment. The quality of parent-child relationships and parent mental health will both be included in this analysis at the individual level, and thus may capture some aspects of parental mediation.

Institutions vary according to the size of the areas they serve, having different compositional characteristics, culture and resources. For example, a government central office may serve a larger national area while a primary school may serve a very small locality of a few surrounding villages or streets. These local institutions and services are mediating mechanisms of the place they serve, taking on the characteristics of a place, as they are often embedded within communities and required by those in the surrounding area. The manner by which these local institutions function, in terms of resources and effectiveness, affects those living within that area, both in how institutions are experienced by residents as well as

whether they serve the needs of the communities (Lupton, 2004; Galster, 2012). Institutional mechanisms are extremely relevant in the context of education with the school being the key local institution affecting children's educational outcomes. Schools are area based because most young people are educated near their home, with children traveling roughly 1.4 kilometers on average to primary schools in England (Ferrari & Green, 2013). However, other institutions or public services such as libraries, police stations, social work, childcare and youth centres may also contribute to a young person's attainment. For some, libraries, youth centres and childcare may be the prime source of social or cultural capital if it is unavailable at home.

Finally, within the broader group of institutional mechanisms is neighbourhood or place stigmatization. Place based stigmatization occurs when institutions, in particular elite institutions, hold negative stereotypes about certain deprived neighbourhoods and their residents (Atkinson & Kintrea, 2004). This stigmatization can limit opportunities for individuals from these areas. Ultimately, this can end up leading residents, due to constraints on their options, into fulfilling the stereotypes assumed of their area. Additionally, local institutions can face stigmatization from larger institutions and the public. This has been a particular problem for schools in deprived areas, often leading them to struggle to attract teachers (particularly experienced teachers) affecting their ability to support students (Lupton, 2004). This stigmatization can then be further entrenched through negative inspections, school rankings and exam results, discouraging middle-class parents and shaping the school cohort.

While the school is considered a key local institution, it will be included in this study as a separate level due to its clear, direct relationship to the outcome of interest and further operationalisations will not be discussed. However, although the school will be considered a

direct mechanism in its own right, further discussions will keep in mind the link between place and schools.

3.3.3 Operationalising Place

The following sections draw on the theories outlined earlier in the literature review, considering how neighbourhood mechanisms and the three forms of capital have been, and can be, operationalised at the neighbourhood level. It then goes on to discuss how to best capture neighbourhood boundaries in a quantitative study, considering different scales of neighbourhood whilst keeping in mind the age of the young people under study.

Measuring Neighbourhood Mechanisms and Capitals

At the individual level, economic capital is the most common of the three capitals to be utilised in quantitative studies, usually through income. However, at the neighbourhood level this is more challenging due to the lack of data available. Research undertaken in countries with detailed register data (such as Sweden (Andersson & Malmberg, 2015; Galster et al, 2008) and Finland (Kauppinen, 2007)) find it is easy to create place-based measures of income, such as the average income or the proportion living above or below a certain yearly income. However, the census, the only dataset covering all residents of England, has no details on income[29]. Therefore, as there is no available information on income or wealth at the place level, it is necessary to consider whether there are any other alternative measures of economic capital.

Indicators of assets could be useful proxies for economic capital. As discussed in Section 3.2.2 (outlining the literature on economic capital), property ownership is a relevant aspect

[29] The English Index of Multiple Deprivation includes an income index, however, this is calculated using proxy variables sourced from administrative data such as the proportion of residents in Income Support families and Income-based Jobseeker's Allowance (Smith et al., 2015).

of economic capital at the individual level, therefore home ownership or tenure at the area level may be suitable measures of neighbourhood economic capital. In the US the proportion of social housing is not selected as a measure of economic capital or wealth. Instead, due to the ghettoization and negative outcomes of residents living in areas with high levels of social housing, it is selected as an effective proxy for the poverty and poor living conditions found in many of these estates and covering a broader concept than economic capital. As this study utilises English data, it could instead use measures of home ownership at the area level to identify the economic capital available to its residents. High proportions of owner occupation would signify higher levels of economic capital as opposed to identifying low economic capital through social housing.

Mohan et al (2004) use car ownership, available in the Census, as a proxy for wealth. While car ownership requires some economic capital, it is also patterned by the rurality of a neighbourhood, with people living in rural areas being more likely to own a car than those in urban areas (Twigg et al., 2006).

The Census also holds information on individuals' occupations (classed into groups by the NS-SEC). While occupation is not perfectly correlated with income, it does capture income to some extent, as well as education, managerial status and occupational autonomy. The Census also indicates economic activity and unemployment, helping to identify those that are not in the labour market. Therefore, a combination of the proportion of individuals who are homeowners, unemployed and in elite occupations within an area can help to identify the economic capital available at a place level.

Measuring the economic capital in the area is not enough to determine whether a relative deprivation or competition effect is found. The theories of relative deprivation and competition both require information on the individual's economic position in comparison to those around them. The clearest way to analyse this statistically is to interact the economic

position of the individual with the average economic position within the area[30]. In situations where there is a statistically significant negative impact then relative deprivation or competition could be present, depending on whether the individual is similar (poor in poor neighbourhood suggesting competition) or dissimilar (poor in less deprived neighbourhood suggesting relative deprivation).

Therefore, using information on neighbourhood economic capital and considering how this differs from the economic capital available through the family would allow identification of competition or relative deprivation effect.

The measurement of cultural capital within the family is often constrained by the data available (see Section 3.2.6, Operationalisations of Capital) and this challenge is reflected at the place level. In England, large-scale surveys do not tend to sample sufficient individuals within one area to make reliable estimates of cultural capital for small geographic areas. However, the Census does have information on the level of education. As discussed in the individual level literature, qualifications are a form of institutionalised cultural capital and are correlated to some extent with the individual's cultural behaviours and beliefs (embodied cultural capital). Therefore, qualifications can be utilised as a proxy measure for cultural capital given that there is little cultural capital data available at the place level. As with Kauppinen's (2007) study, the proportion of neighbours with high levels of education can be calculated. In addition to this, the Census can provide information on the number of young people (16 to 24 year olds) in a neighbourhood with no qualifications.

[30] Ginther et al (2000) uses a measure of median area income to calculate a relative income variable. However, due to the UK census data not collecting information on income, then this would not be possible for this study.

From the previously mentioned literature on neighbourhood effects and education, collective socialisation is seen to be an important factor, with many indicators of collective socialisation also being representative of cultural capital. To understand whether the mechanism of collective socialisation is operating, it will be necessary to operationalise neighbourhood cultural capital.

Operationalisations of social capital in the neighbourhood have tended to be different from those for social capital at the family level. While it is still conceptualised as connections between individuals, the operationalisation in the neighbourhood and place literature originates from the work of Putnam (2001) and, instead of measuring the number of connections an individual has, it tends to focus on the theorised outcomes of social networks using these to identify areas of high or low social capital.

One example of how social capital has been operationalised in the quantitative neighbourhood literature is through the measurement of neighbourhood trust, a theorised outcome of social capital. This has been measured in a variety of ways but most successfully by the studies that capture an individual's trust through targeted questions (Subramanian et al., 2003) or with circumstantial examples (Stolle et al., 2008) rather than using proxy measures. Measures such as trust assume the effect of social networks without identifying whether the individual is actually involved in a network. It could equally be the case that individuals are more trusting because the neighbourhoods are safer and little to do with neighbourhood networks.

Neighbourhood social networks and social capital are also identified as providing a form of social support for parents and young people. One study considers how the neighbourhood and family environment affects the social support available to parents and, in turn, how this affects children's development (Klebanov et al., 1994). Greater social support was associated

with greater provision of learning experiences at home for children while being a single parent and family poverty were associated with lesser social support. Therefore, a more useful measure would identify whether parents do in fact have friends or family in their area that can be used for social support rather than an overall climate of trust that may have little impact on how individuals behave.

Bonding social capital is also suggested to be a source of social support while bridging social capital (Putnam, 2001) is seen as a source of capital for those usually excluded from that network, for example, working class or minority ethnic individuals. Some studies considering social capital outcomes (e.g. increased trust, attitudes towards neighbours and formal and informal interactions) within neighbourhood research have used diversity scores for race and income to represent community diversity (Stolle et al, 2008; Letki, 2008). However, this does not take account of the individual's own characteristics and whether they are an 'insider' or 'outsider' within their neighbourhood. For example, a White person in a predominantly White area is part of a homogeneous group while a minority ethnic person in that neighbourhood is not, yet a diversity score does not capture this. An interaction between the same measure at the individual and the neighbourhood level captures bonding social capital i.e the ethnicity of an individual and the proportion of the neighbourhood that are of that ethnic group. If this interaction has a positive effect then we can say that bonding social capital has a positive effect. Inversely, bridging social capital can be operationalised by interacting the majority (White ethnicity) and minority measures.

These examples illustrate the role of neighbourhood networks suggesting that they can provide both moral and practical support for parents and young people. Additionally, the key dynamics by which bridging and bonding social capital have been theorised to operate are along ethnic and economic lines and so, the characteristics utilised at the individual and

neighbourhood level should reflect this. This means that to measure the impact of bridging and bonding social capital multiple, between-level interactions are needed.

What places matter for young people and their families?

Place, in particular neighbourhoods, have been objects of study in both policy and education research. However, what a neighbourhood is, is partly dependent on context. Garner and Raudenbush (1991, 252) point out that there is not one clear definition of neighbourhood because:

> *"Neighbourhoods are not unidimensional, spatial units. They vary in their definition, depending on the type of problem to be studied and the supposed relationship between their characteristics and the phenomenon under study"*

This means that it is difficult to re-use spatial scales or boundaries from previous studies as the context and research topics are different. Additionally, the geographies that influence a child's education vary depending on the pathways and processes believed to be operating between the place, family and child. The choice of dependent variable may also influence considerations of geographical scale. For example, school catchment area would not be considered when the wish was to research the impact of place on old age health. Therefore, selecting a geography appropriate to the activities under consideration is also important in deciding upon a scale of measurement and the definition of neighbourhood. This section aims to consider different geographic scales, considering whether they are relevant to the mechanisms of place, to young people's education and whether they are operationalizable in a quantitative study. It will begin with the smallest geographical scale used, the street, and move through combinations of streets up to larger institutional geographies such as school catchment area and Local Education Authority area.

The street is one of the smallest geographies considered to be a 'neighbourhood', one filled with neighbours in the most literal sense, and is related to a wide array of outcomes (Galster, 2012). This type of neighbourhood is one based on proximity, with residents sharing immediate surroundings. As this is a spatial level that is often available in the data, particularly the census, many quantitative studies have used this close proximate geography; US census blocks, English Output Areas and Scottish Datazones. In England, Output Areas (OA) available from the 2011 Census contained around 309 individuals (ONS, 2017). These small geographies allow for comparison between areas, as they are similar in scale, supporting easy comparison between the effects of living in one street compared to another. Data at these levels are easily accessible via the census and are downloadable online.

Proximity is also important to the idea of exposure to neighbourhood as individuals living nearby are likely to be exposed to similar factors (Galster, 2012), both social and environmental, the former being the key focus of this thesis. This spatial proximity allows some level of interaction between neighbours to be assumed although the extent of this interaction will vary between individuals and neighbourhoods. Neighbours are also likely to share other characteristics, partly due to accommodation similarities such as the cost and style of accommodation along with other observed social structural patterns such as immigrants moving in to areas that already have high levels of immigrants (Crowder et al., 2011). This connects the scale of Output Areas to the measures discussed in the previous section such as the proportion of owner-occupied accommodation and the proportion of ethnic minorities.

Furthermore, the young people under study are aged eleven; at this age young people are usually able to spend time in the immediate area without parental supervision. This could be to socialise with other young people or to travel to specific locations such as school or sports centres. However, at eleven, young people are less likely to venture far from the home

without parental supervision. Therefore, these smaller spatial units are appropriate for researching the educational outcomes for young people of this age.

One key concern about using such small geographies is that they may exclude the main sites within an area where social interactions occur, such as parks or shops, meaning that they do not outline the spatial area that an individual actually uses. Therefore, Output Areas may not be relevant to the social processes underway, particularly social mechanisms that require social interactions. This could lead to the underestimation of neighbourhood effects since the characteristics of the space used would not correspond to the wider geographies in which young people are spending time. Therefore, using a larger spatial scale may be more suitable for this research when capturing the broader areas used by young people as well as their families.

Larger administrative spatial scales exist for census data, aggregating those smallest geographies up to larger areas[31]. However, within these larger areas, it is unlikely that the young people in the study will be interacting directly with many of the residents on a regular basis due to the physical scale of the area.

A larger scale geography utilised in much of the education literature is school catchment area. As most young people travel to school on a daily basis, rather than boarding at school, then young people tend to live a distance that is travelable and relatively close to home. In addition to this, most schools use distance as part of their admissions criteria (Croft, 2004; Ferrari and Green, 2013), meaning that the area surrounding the school has become crucial in determining which school a young person attends. This creates a link between the areas that young people and their peers grow up in and attainment (Lupton, 2003; Galster, 2012).

[31] Lower super output areas (LSOA) has a minimum population of 1000 and a maximum of 3000 residents. Middle super output areas (MSOA) has a minimum population of 5000 and maximum of 15000 residents.

However, the schooling system in England is growing in complexity with the introduction of free schools and academies. This combination of diverse parental choice and the complex array of schools has led to over one-half of young people in England not attending their nearest school (Ferarri & Green, 2013; Easton & Ferrari, 2014). This complexity is illustrated in multiple studies that have modelled true catchment areas in their research process. Easton and Ferrari's (2014) study of travel to school behaviour in Sheffield found that the catchment areas of schools are complex and overlapping. Harris and Johnston (2008) investigated the process of ethnic segregation of students caused by school choice, using an endogenic approach to create 'core' catchment areas for schools in Birmingham. Considering the complexity of creating these geographical catchments in two English cities, Sheffield and Birmingham, it would be challenging to outline statistically school catchment areas for a whole country. Yet Sykes and Musterd (2011) warn that if school is not taken into account then neighbourhood effects can be greatly over-estimated as the link between place and school is ignored. While Kauppinen (2008) agrees that schools contribute to explaining young people's attainment, they come to an important conclusion, that neighbourhood and school contexts are not 'perfectly overlapping or substitutable' (ibid, 387). It could be the case that while less than half of young people in England are going to their nearest' school, most will still attend a local school. Schools therefore remain a neighbourhood or area institutional mechanism, so must be taken into account.

In terms of the relevance of these larger spatial areas to the dependent variable, there is less of a link between education and the larger administrative spatial areas (Lower Super Output Area (LSOA) and Middle Super Output Area (MSOA)). While young people are more likely to experience the social mechanisms in the Output Area, we may also observe effects of their peers on their attainment. Due to complex catchment options and parental choice, Output Areas, LSOA and MSOA do not directly map onto school catchments. This means that

no spatial scale available in the census can capture all possible peer effects. While two young people in the same Output Area may not attend the same school, they are much more likely to interact due to spatial proximity than children living in either sides of an LSOA or MSOA. This again suggests that the larger spatial scale is more suitable for adult outcomes and in turn, any effects on attainment found at this level are likely to be attributed to parent mediation.

The final administrative spatial scale to consider is the Local Education Authority (LEA). There are 152 LEAs in England and their role is to distribute and manage state comprehensive and grammar schools, as outlined in Section 2.4 (Education Structure and Schools). Although, to a certain extent, funding and management have moved away from the LEA, becoming more centralised, most students continue to attend a primary school managed by the LEA. Therefore, this large administrative spatial area may identify ways that resources are distributed as well as the LEA's ability to manage the schools within the area. Additionally, the complex development of the English education system, as outlined in Section 2.4.1 (School Types) has meant different distributions of school types between LEAs with some having many grammar schools and some having none.

With all administratively determined spatial boundaries there remains the issue that the boundaries do not correspond directly to the spaces an individual uses. Qualitative methods have tried to determine how individuals use the area around them, what factors influence the scale of spaces they use and how they determine one neighbourhood from another (see Lupton, 2003). These qualitative measures of boundaries capture more natural neighbourhoods formed by both physical and social boundaries. However, these boundaries do not allow for quantitative study on a large scale and no spatial data like this is available for the data used in this study.

A further concern is that administrative neighbourhood data has relatively consistent boundaries in terms of their number of residents but vary in the area of land enclosed within the boundaries. This means that in rural locations the area of the administrative unit will be a much larger than in an urban environment due to population density. While this is statistically useful (i.e data on the residents in each area is roughly similar in population size) there could be an impact on how large an effect is found for the spatial unit on the dependent variable. In rural areas children aged 11 are unlikely to travel alone the distance required to span a whole OA, making it less likely that they will come into contact with the whole area in the same way as a child in an urban environment might.

It is evident that capturing a realistic and relevant place in a quantitative analysis is difficult when considering young people and their families. Due to the age of the young people in this study, the smallest spatial scale seems most suitable for capturing the social mechanisms underway. To gain a better understanding of peer effects and institutional mediation, catchment areas should be considered. However, as school catchments in England are multiplex and vary from year to year, it is an extremely difficult spatial scale to capture on a national level. Therefore, to account for the effects of schools on attainment, the model must include a level for school to partition the school variance from the spatial variance. To provide a better understanding of regional disparities in school type, as well as the effects of differences in school management, the largest spatial scale LEAs will be used.

3.4 Research Hypotheses

This section draws upon the literature covered earlier in this chapter to develop working hypotheses to help answer the research questions outlined in Chapter 1. As discussed, there are two main questions (Q1 and Q2) and two sub-questions (Q1.1 and Q2.1), with the main question this thesis wishes to answer being whether economic, social and cultural capital at home and in the neighbourhood have a relationship to young people's Key Stage 2 attainment.

Q1: To what extent are family economic, social and cultural capital associated with young people's attainment?

In the literature, economic, social and cultural have all been shown to have a positive relationship to educational attainment. Therefore, it is hypothesised that:

H_1: Economic, social and cultural capital will all have a positive relationship to attainment when controlling for other individual factors.

H_{1Null}: Economic, social and cultural capital have a negative or no relationship to attainment when controlling for other factors.

Q1.1 What is the interplay between different forms of capital at home?

It is hypothesised that access to multiple capitals may give young people an additional advantage. In particular, it is theorised that economic capital enhances both social and cultural capital.

$H_{1.1A}$: Economic capital enhances the effect of social capital.

$H_{1.1A\ Null}$: Economic capital reduces the effect of social capital or has no additional effect.

$H_{1.1B}$: Economic capital enhances the effect of cultural capital.

$H_{1.1B\ Null}$: Economic capital reduces the effect of cultural capital or has no additional effect.

It will also test for interplays between different aspects of the same capital, looking for additional positive effects. In particular, between cultural capitals of the parent and child, and between embodied and objectified forms.

$H_{1.1C}$: Parent cultural capital enhances the effect of child cultural capital.

$H_{1.1C\ Null}$: Parent cultural capital reduces or has no effect on the effect of child cultural capital.

$H_{1.1D}$: Embodied cultural capital enhances the effect of objectified cultural capital.

$H_{1.1D\ Null}$: Embodied cultural capital reduces or has no impact on the effect of objectified cultural capital.

Q2: *To what extent are neighbourhood economic, social and cultural capital associated with young people's attainment?*

It is hypothesised that positive neighbourhood characteristics have a positive effect on attainment, while negative characteristics have a negative effect.

H_{2A}: Areas with higher positive neighbourhood characteristics have a positive effect on attainment.

$H_{2A\ Null}$: Areas with higher positive neighbourhood characteristics have a negative or no effect on attainment.

H_{2B}: Areas with higher negative characteristics have a negative effect on attainment.

$H_{2B\ Null}$: Areas with higher negative characteristics have a positive or no effect on attainment.

In particular, it will consider whether there is presence of role model effects:

H_{2C}: A neighbourhood with a higher proportion of young people with no qualifications has a negative impact on young people's attainment.

$H_{2C\ Null}$: A neighbourhood with a higher proportion of young people with no qualifications has a positive or no impact on young people's attainment.

Q2.1: *What is the interplay between neighbourhood and individual capitals and characteristics?*

It is hypothesised that there will be some additional effect when we consider the neighbourhood, the individual's and family context together. These interactions include looking for the mechanisms of bridging and bonding social capital, relative derivation and collective socialisation.

$H_{2.1A}$: Ethnic bridging social capital has a positive effect on attainment.

$H_{2.1A\ Null}$: Ethnic bridging social capital has a negative or no effect on attainment.

The literature on ethnic bonding social capital is not conclusive with Putnam (2001) suggesting that bonding social capital is likely to have a negative effect on attainment, while

education literature has suggested that it may provide a social support role within the neighbourhood, ultimately having a positive effect on attainment.

$H_{2.1B}$: Ethnic bonding social capital has an effect on attainment.

$H_{2.1B\ Null}$: Ethnic bonding social capital has no effect on attainment.

$H_{2.1C}$: Relative deprivation effects are found for economic capital at home and in the neighbourhood with economically deprived individuals experiencing a negative effect on attainment when in areas with higher economic capital.

$H_{2.1C\ Null}$: There is no relative deprivation effects found for economic capital at home and in the neighbourhood.

Or collective socialisation:

H_{2D}: Collective socialisation effects are found for cultural capital at home and in the neighbourhood with cultural capital deprived individuals experiencing a more positive effect on attainment when in areas with higher cultural capital.

$H_{2D\ Null}$: There is no collective socialisation effect found for cultural capital at home and in the neighbourhood.

The combination of theories from the individual (the forms of capital and theory of reproduction) and neighbourhood (mechanisms) literature are used as a lens to guide this research. Economic, social and cultural capital will be operationalised within the individual and neighbourhood, bringing together these contexts. Bourdieu's capitals have rarely been operationalised in the neighbourhood literature (Abel, 2008; Frohlich & Abel, 2014) and therefore Putnam's (2001) conceptualisation of social capital will guide the operationalisation at the neighbourhood level.

Few neighbourhood studies with an educational outcome variable have utilised in-depth individual level information, therefore, this study will aim to use detailed individual and neighbourhood measures. Considering the literature, it is clear that one of the key limitations is the data available and this will be discussed in the following chapter (Section 4.1, Data).

As can be seen in Section 3.2 on the family and individual literature, the quantitative education research has considered the role of cultural, social and economic capital individually on young people's attainment and educational outcomes. However, no reviewed educational studies have included all three forms of capital. Additionally, the operationalisations of cultural capital have been criticised for focusing on a highbrow interpretation and missing the embodied form of cultural capital. Therefore, a key gap that this research will address is to use all three capitals in the analysis and to capture the various aspects that make up each capital.

The following chapter will discuss the methods needed to overcome the challenge of using multiple contexts and all three capitals.

Chapter 4: Methodology

This PhD uses quantitative methods to investigate the research questions outlined at the end of Chapter 1. As this PhD aims to investigate the effects of various factors at the individual and neighbourhood level on inequality in educational attainment, the data and methods used must be appropriate to be able to make general inferences about the population of interest. Therefore, it uses secondary data from a nationally representative survey (the Millennium Cohort Study) linked to administrative data from the Census and National Pupil Database. Using a large national survey allows for in-depth details about student background, while administrative data is necessary to understand the neighbourhood context and educational outcomes of individuals. The use of three datasets allows us to characterise different levels in detail rather than using exclusively the limited information on place available within the Millennium Cohort Study (MCS).

A quantitative approach has been chosen for multiple reasons. Firstly, the large representative sample of young people in the MCS allows findings to be generalised over the population as a whole. As the sample is also stratified, meaning certain sub-groups within the population are over-sampled, it is possible to carry out analysis within and between sub-groups of interest. The spread and size of the sample is also very important when analysing the neighbourhood aspect of this research. Although qualitative studies add depth to our understanding of neighbourhood effects they have often been forced to focus on specific communities and at most compare a selection of case studies in a few communities. Instead, this PhD takes account of the context of various types of neighbourhood, including those in deprived, middling or not deprived neighbourhoods, between urban and rural communities, over multiple geographical regions in England.

To answer the main research questions, a cross-classified, multi-level model including neighbourhood and family characteristics will be used. A multi-level model is used in both the family and place analysis as it allows us to account for the clustering in the data and estimate the extent of the variance attributed to the levels of interest. Finally, as the data provides a rich source of information on young people and their families, it makes use of exploratory factor analysis to create factor scores for the three capitals, economic, social and cultural.

Each of these areas, the data, methods and variables are now outlined in more detail.

4.1 Data

The three datasets utilised in this PhD are necessary to investigate the different elements of the research question; the child and their family; the school and educational attainment; and place. Other datasets were considered, such as the OECD's Programme for International Assessment and Growing Up in Scotland, which would have focused on Scotland. However, the MCS was considered the most detailed and allowed for the most appropriate measure of young people's educational attainment i.e. a curriculum-based test rather than a cognitive test. It was decided that the dependent variable should be one of ability as judged by the school due to the role of schools and their curriculum in Bourdieu's (1990) theory of reproduction (see Section 3.1.2, Theory of Reproduction).

4.1.1 The Millennium Cohort Study

The MCS (UoL, 2017) is a longitudinal cohort study of children born in the UK in 2000. The data is gathered by the Centre for Longitudinal Studies and focuses on young people and their families (Hansen et al, 2014). It contains rich information on family and school life, from

parent[32] and child perspectives as both are surveyed. These multiple perspectives and a variety of information on the cultural, social and economic experiences, beliefs and behaviours of young people and their families is another motivation for using the MCS. Finally, the MCS offers the possibility of linking data on individual participants to geographic and school information.

The MCS covers the whole of the UK but for this PhD only the English sub-sample is used. The education system within each country in the UK is different, to a greater or lesser extent, meaning that any analysis should be carried out on each country separately. The focus on England is because this thesis wishes to use school attainment. England provides the largest sample where children are tested at multiple points over the course of their school career, meaning that attainment data is available for the young people before their final leaving examinations. In comparison, children in Scotland do not sit national exams until the age of sixteen, meaning that analysis of a curriculum-based test score is not available at age eleven.

The MCS uses a clustered sampling design and after weighting provides a representative sample of young people in the UK (Gallop et al, 2013) accounting statistically for non-response, attrition, clustering and over-sampling of minority groups. In the English sample, the clustering was undertaken at the ward level, with over-sampling of wards with high levels of ethnic minority residents (30% or above) and wards with high and low levels of child poverty (conceptualised as disadvantaged and advantaged wards) (Hansen et al, 2014). The main dataset used is the English sub-sample of the 5th wave of the MCS that was collected in 2012-13 (8684 young people), when the young people were aged eleven (Platt et al, 2014).

[32] The majority of parents taking part in the full parent survey are natural mothers (95%), 4% are natural fathers and 1% are 'Other' including adoptive mother or father.

It is supplemented by some additional data from wave 2 of the MCS (2003-4 at age 3) on the child's cognitive development prior to entering formal education.

The MCS uses multiple data collection tools including face-to-face interviews using a questionnaire and self-completion questionnaires (Gallop et al, 2013). These different aspects of the survey target the main carer and secondary carer (usually mother and father), child of the millennium (CM) and for wave 5, a teacher survey. The parent survey has two main parts, questions focusing on them (the parent) and family characteristics, and questions around each CM within the family. As the children were eleven at the time of data collection, they were given their own self-completion questionnaire which they were encouraged to complete on their own (Platt et al, 2014). The child also undertakes a short test (verbal similarities) to generate a cognitive score and to allow comparison over the different waves of the survey. Each of these survey sections are kept as separate datasets which can be combined using the 'household' dataset that stores the information to identify each of the household members over the course of the survey.

Table 4.1: MCS sample and sub-sample size

Sample	Sample Size
Total Wave 5 UK Sample	13,496
Total Wave 5 English Sample	8,650
Final sample with all geographic and educational outcomes	6,445

Some families in the MCS had more than one CM (child of the millennium) in the sample. This provides an additional source of clustering in the data and as this analysis is utilising the multi-level approach then a family level would be required in the model. In total there were 230 CMs who had one or more siblings in the sample meaning they were a twin or triplet. Due to few families having siblings within the dataset then the family level was of limited use, therefore, it was decided to drop twin and triplet siblings at random. The final sample of CMs

with linked geographic and education data including only one CM per family had a total of 6,445 observations (Table 4.1).

4.1.2 The 2011 Census

The 2011 Census (ONS, 2013) was undertaken on the 27th of March of that year and aims to cover the whole population of the UK, although separate census were undertaken in England, Scotland, Wales and Northern Ireland. Each household was required to complete a paper questionnaire about the demographic characteristics of all the residents in the household, the accommodation they live in as well as some additional opinion questions. As the dataset includes all residents in the UK, the data can be aggregated to different spatial scales ranging from country (England, Scotland, Wales or Northern Ireland) to Output Area (a small spatial area of roughly 309 individuals (ONS, 2017)) permitting flexibility for researchers to use the most relevant scale for the research. The census is the only appropriate data to give a full picture of the demographics of an area. Therefore, this is the only suitable data source available for the area level of this thesis.

The English census data can be accessed online via the UK Data Service's Infuse service. This allows aggregate data measured at these various levels to be downloaded as a CSV file and then converted for use within other statistical software. For each geographical area there is a unique ID which can be used to link the census to other data sources. As the place level utilised in this analysis is the smallest geographical boundary available (Output Area as discussed in Section 3.3.3 on operationalising place), for some variables, counts are at risk of being disclosive. To ensure that no individual's personal details are disclosed, the Office of National Statistics (ONS) uses a record switching method, swapping one individual with a similar individual from a different household (ONS, 2011). This method ensures that analysts cannot, with certainty, infer characteristics of an individual from the remaining data while

maintaining its reliability. This means that the Census can be accessed for small geographical areas, remaining exceptionally detailed and without compromising anonymity.

The variables selected from the census are proxies for different aspects of economic, social and cultural capital within the area. While these are not as detailed as the information at the family level, the scale and coverage of the census makes it a reliable source of data on place.

4.1.3 National Pupil Database

The National Pupil Database (NPD) is a pupil census of all the young people in the state education system in England (DfE, 2017d)[33]. This thesis draws on the NPD at two levels, the individual to measure their achievement within the school system, and at the school level, to identify the type of school that the child attends. This information is supplied via the UK Data Service with unique anonymised identifiers designed for linkage with the MCS.

4.1.4 The final dataset: data-linkage

As this research uses multiple datasets, it is necessary to link data. Linking data has many benefits, but the key benefit for this research is that it adds additional depth to our understanding of the contexts within which young people grow up: their area, school and family.

The main MCS dataset is formed of multiple surveys undertaken by different members of the family; these are linked using the family, child of the millennium (CM) and people identifiers. The survey sections utilised were the parent survey and parent self-completion

[33] There is also additional information on some schools that are not maintained by the state such as special schools and some independent schools

survey (about themselves and household), parent survey about the CM, the CM survey, derived household and child variables and the CM cognitive test (wave 2 only).

The secure access data (NPD data and geographic identifiers) allow for further linkage. The data linkage was undertaken using the Stata 'merge' command in the UK Data Service's secure virtual lab. The NPD data is provided with the anonymised MCS family and CM identifiers, therefore they can be linked to the MCS data in a similar way as the MCS datasets are linked. The geographic identifiers are not anonymised and the IDs are in the same form as used in the census data. The Output Area identifiers allow for the easy linkage of the census area data to the MCS. Clearly, as the MCS is a sample of young people, this will not be a one-to-one match. Some areas will have no MCS families and some have multiple MCS families.

4.1.5 Data Access and Ethics

As multiple datasets are used, a variety of different access criteria hold. The MCS and NPD were both accessed directly through the UK Data Service (UKDS), a centre funded by the Economic, Social and Research Council to manage, store and provide secure access to data, particularly survey and longitudinal data. The Census data is also managed by UKDS and is accessed through their special service InFuse that provides aggregate data to researchers. The InFuse service is 'open access' meaning that anyone can access and utilise this data and so there are fewer complications with using this data. However, researchers are still expected to work ethically e.g. by not attempting to identify individuals or to produce work that is potentially disclosive.

The MCS data was accessed at multiple security levels during this study but the final dataset, with both area and school identifiers, is only available to researchers at the 'secure' access level. This meant that the data must be analysed in the online secure lab, with the

workspace meeting certain criteria and all outputs checked by UKDS staff to confirm they were not disclosive. The level of detail available meant continual awareness of the outputs and methods utilised. Secure access training, provided by UKDS, was undertaken and passed prior to accessing the secure data in December 2016.

In addition to the procedures implemented by the researcher, there is confidence in the data collection and anonymisation procedures of the organisations involved (the Centre for Longitudinal Studies, the Office of National Statistics and the Department for Education), all of whom outline their data collection and anonymisation procedures in their data documentation[34].

[34] Further details of the collection methods and ethics of these studies can be found on the UKDS website under the dataset DOIs: MCS (10.5255/UKDA-SN-7464-4), 2011 Census (10.5255/UKDA-SN-7427-1), NPD (10.5255/UKDA-SN-7712-1)

4.2 Methods

A range of quantitative methods are used to analyse the data and answer the research questions outlined earlier. An explanation of factor analysis, a technique used to operationalise the three forms of capital, and the methods used to answer the research questions will be outlined.

4.2.1 The three forms of capital: a latent approach

The MCS has a large number of variables that have been theoretically and empirically related (in the qualitative and quantitative literature) to economic, social and cultural capital. A latent approach can be used when no single variable can capture the concept alone and instead aims to identify the underlying concept. There are two key motivations for using a latent approach in this PhD: the first is theory driven, aiming to capture the latent aspect of cultural, social and economic capital while the second is empirical, wishing to use as much of the available data as possible. Additionally, the choice of latent modelling technique applied, exploratory factor analysis, will be explained in comparison to other possible options.

In this thesis, Bourdieu's theory of capital is viewed as a broad framework by which capitals interact and accumulate creating class reproduction. As discussed in the literature review, the capitals are identified as being constituted of multiple aspects, aiming to capture the variety of ways that individuals can invest in material and immaterial items to maintain or progress their own, or their child's, class position in society. Yet each form of capital is not static, developing over time and place, for example, what was a valuable asset in the 1950s would not necessarily be valuable in 2020. In addition to this, not every individual who is wealthy in capital will invest in the same forms of capital (i.e. a parent may prioritise a particular investment in their child's cultural, economic or social capital, or in combinations of these) or the material and immaterial objects that make up these forms of capital. In this

case, one parent may decide to invest in books while another invests in out of school lessons, yet both investments are in cultural capital even though the variables which indicate this are different. The breadth of the three forms of capital causes problems when proxy or individual measures are used to measure a family's cultural capital, suggesting that proxy variables are not appropriate for capturing the complexity of social, cultural and economic capital. Firstly, individual variables may not be good indicators of individual's capital as a whole. Using individual variables also relies on the assumption that all people invest in the same pattern of material and immaterial items rather than the flexibility of capital as described by Bourdieu. Therefore, a method by which we can capture the underlying capital is sought.

Secondly, the empirical motivation behind using a latent approach is that the MCS data is vast in its detail and this research wishes to maximise the information included in the analysis. Few quantitative studies have measured the three forms of capital in one model, meaning that the scope and complexity of the model that will be used in this analysis is already greater than in other studies that include fewer variables. In multi-variate analysis, if the number of variables tends to the degrees of freedom of the model, then more variation is explained in the dependent variable, irrelevant of the true ability for the variables to predict the dependent variable, increasing the chance of a type 1 error, that is to wrongly reject the null hypothesis (Forsythe et al, 1971). As this study uses a large sample the number of explanatory variables is unlikely to saturate the model (approach the degrees of freedom). However, the same issues around both interpretability and an artificial increase in the model's explanatory power (type 1 error) mean that we should avoid a model containing over fifty variables at the individual level. Due to the richness of the Millennium Cohort Study, with many variables that are relevant to social, economic and cultural capital this research is in an unusual position where there are a large number of variables of interest covering a range of concepts. Therefore, the problem related to type 1 error is particularly relevant to

this thesis, as most other studies have limited data, meaning that only a few variables are available to act as proxies in the measurement of the capital of interest in the first place (as seen in the literature review). Therefore, a latent approach is empirically useful as it allows us to reduce the dimensionality of the data while continuing to account for the wide range of information found within the dataset.

There are multiple types of latent model; a factor analysis was selected as this provides a factor score for each individual on each factor. These factor scores are continuous and allow us to group variables into types of capital whilst also quantifying the amount of capital. In a latent class model, individuals are instead assigned the probability of belonging to one class (or group) over another. Therefore, we cannot judge the scale or to what extent individuals have access to these capitals, only the probability of having them or not. A further benefit of factor analysis is that interactions between capitals would be difficult to undertake with the probabilities produced by latent class analysis. These interactions between two continuous factor scores can easily be undertaken. Therefore, it is clear that factor analysis is the most appropriate form of latent analysis available for this study.

Two forms of factor analysis are commonly used, Confirmatory Factor Analysis (CFA) and Exploratory Factor Analysis (EFA); these types of factor analysis use a maximum likelihood extraction method (Brown, 2006). EFA is data driven and is recommended when the researcher does not know the number of factors required or the pattern of how variables are grouped together within these factors (ibid). Differing from this, CFA "requires a strong empirical or conceptual foundation to guide the specification and evaluation of the factor model" (ibid, 14). While this research has a theoretical model behind the construction of the factors, the number of factors to be extracted is uncertain as, although we have identified three forms of capital, there are multiple sub-groups within these. For example, it is possible to group together variables related to aspirations and attitudes in one factor, and educational

activities and objects in another creating two distinct cultural capital variables. Therefore, this research will build an empirical base using EFA to determine the number and pattern of factors.

The factor analysis was carried out on variables that had already been assigned to one of the three forms of capital based on the literature. This results in continuous factor scores for each type of capital allowing us to see each capital's contribution to explaining the dependent variables as well as allowing for the inclusion of interaction terms. Where a variable had not clearly been defined in the literature as belonging to a specific capital or the grouping had been contested within previous research, the variable was trialled in both capitals and was left in the capital to which it contributed most. This also helped to reduce the role of the researcher in determining where the variable belonged.

Principal components analysis (PCA) is a method of data reduction often used to create indexes and reduce the number of variables. PCA has not been used in this research for two reasons, firstly, PCA does not assume the existence of latent variables while the main aim of this analysis is to generate latent variables to capture economic, social and cultural capital, and not just create a weighted index. Secondly, PCA does not distinguish between unique and common variance, "PCA aims to account for the variance in the observed measures rather than explain the correlations among them" (Brown, 2006, 22). For EFA the underlying factor is seen to 'cause' or be explained by the variables, while PCA simply creates components that are aggregates of the correlated variables and so "does not necessarily reflect some underlying process" (Tabachnik & Fidell, 2007, 662). In addition to these theoretical reasons behind the choice of EFA over PCA when analysis was undertaken (considering that continuous, categorical and binary variables were all to be utilised in this analysis) there was no software capable of constructing a PCA model using all three types of variable. For EFA we can use Mplus which allows analysis with continuous, binary and

categorical variables. In summary, EFA has the advantage of reducing the data while also aiming to describe a set of latent factors and recognise the measurement error in the constituent variables.

The construction of the factors is discussed in detail at the beginning of Chapter 5, the first analysis chapter which focuses on family and child characteristics.

4.2.2 Multi-level analysis for the individual, place and school

The research questions addressed in this thesis focus on the way that economic, social and cultural capital at the individual and area level impact on young people's attainment. This thesis utilises cross-classified multi-level models to answer these questions and to gain a better understanding of how different contexts can affect young people's attainment. This section begins by discussing the modelling options available and explains the need for a cross-classified model. It also discusses the use of fixed and random effects when explanatory variables are introduced into the model.

Most studies of the effects of young people's access to economic, social or cultural capital at the individual level have utilised ordinary least squares (OLS) regressions, where the dependent variable is continuous (DiMaggio, 1982; DiMaggio & Mohr, 1996; Sullivan, 2001), or multivariate logistic regressions, where the dependant variable is binary or categorical (Jez, 2014; McNeal, 1999). Multivariate logistic regressions and OLS give estimates of the relationship between an independent variable and the dependent variable when controlling for the other independent variables in the regression. This would allow an estimation of the scale of the relationship between each capital and the young people's attainment and whether it is positive or negative to be made. However, as discussed above, the MCS uses a clustered sampling design that oversamples families from areas with certain characteristics. This would cause problems for both OLS and multivariate logistic regression as it violates the

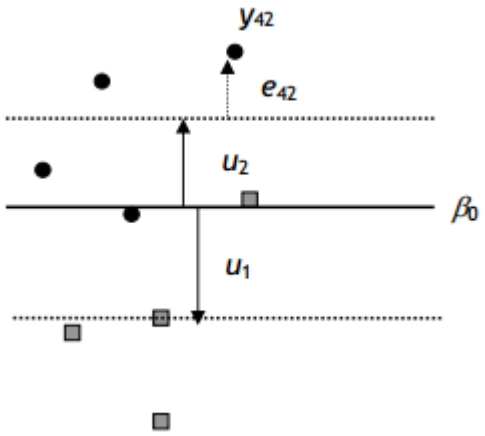
assumption that the residuals[35] are independent from one another (Kennedy, 2013). For our sample the observations were not sampled randomly, instead a clustered sampling design was used which means that individuals in the same cluster are likely to have some similar characteristics and therefore the assumption would be violated.

One way to resolve this issue is to use weights and robust standard errors as is recommended by the Centre for Longitudinal Studies (Hansen, 2014). While this would give us an accurate picture of the relationship between each of the capitals and young people's attainment, it does not allow us to understand the impact of these different contexts (schools, neighbourhoods and LEAs) on attainment. Multi-level models are recommended when there is a need to understand the different levels or clustering in the data, not just control for them (Goldstein, 2003).

A multilevel model (MLM) aids understanding of how variation in the dependent variable is distributed between different levels in the data, meaning that the contexts which have the largest impact on the dependent variable can be identified. For example, it is possible to determine how much variation in attainment score is attributable to the individual level and how much is attributable to the other contexts to which young people are exposed, such as neighbourhoods.

[35] The residual is the difference between the observed value of the dependent variable for that individual and the predicted value for that individual (Upton & Cook, 2014)

Figure 4.1: Diagram of the individual and group residuals in a two-level multilevel model



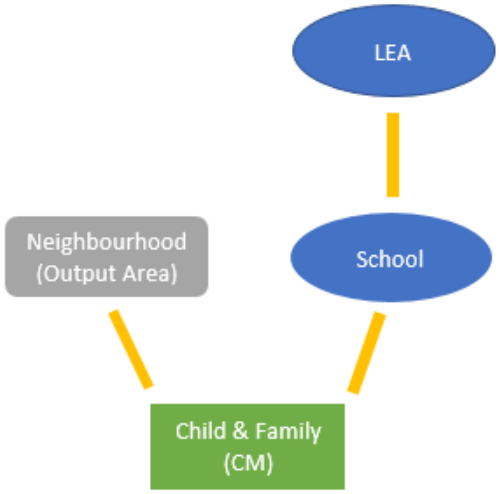
(Diagram from Steele, 2008)

As discussed above, MLMs recognise that the clustering of observations causes dependencies between the observations, resulting in correlated residuals. MLMs partition the variation in the dependant variable, splitting the residuals into parts that correspond to each level of the model. This results in a between group variance and within-group variance for each level. Figure 4.1 is a visual representation of part of a multilevel model where we see two groups (group 1 – square and group 2 – circle) that represent clustering in the data. In this research, these groups could be two different neighbourhoods with multiple CMs. The solid black line is the overall mean for all observations (β_0), the dotted lines represent the two means of the two groups, with grey squares being the observations in group one and black circles observations in group two. The residual for each group is calculated by subtracting the group mean from the overall mean (u_1 and u_2) and allowing for the calculation of the between group variance. The individual level residual is calculated by subtracting the individual's value from their group's mean allowing the calculation of the within group variance. For observation y_{42} the individual level residual is shown by arrow e_{42}, which is the difference between the group 2 mean (the upper dotted line) and the observation value.

Within the set of MLM methods there are different models suitable for different data structures and questions. The simplest multi-level data structure is hierarchical, with each group or cluster of observations fitting neatly under another cluster. For example, residents within households within streets. In this case, no resident in the same household can be in different streets. However, the data structure for this model is complex as young people from the same neighbourhood (Output Area) might not attend the same school, making the data structure non-hierarchical. Although many schools use distance criteria for school admissions, meaning many children in the same neighbourhood will attend the same school, due to parental choice, some will not. This means that a cross-classified MLM is necessary, to allow for this non-hierarchical structure. However, structurally, one child cannot simultaneously attend two schools and, due to the method of data collection, where they are interviewed at their main residence, they can only live in one neighbourhood. Therefore, we do not require a multiple membership model which allows for individuals to be part of multiple groups at the same level[36]. The data structure is illustrated with both a diagram and equation for the most basic null cross-classified model, the starting point for this analysis.

[36] In a longitudinal analysis of this dataset we could have the child attending more than one school, either changing school or moving from primary to secondary, and living in more than one neighbourhood, if their family move house or if they stay with a different primary carer. However, this is just a cross-sectional analysis.

Figure 4.2: Diagram of null cross-classified model structure



Equation 1: Equation of null cross classified model[37]

$$Totalscore_i \sim N(XB, \Omega)$$

$$Totalscore_i = \beta_0 + e_i + u^{(2)}_{OA(i)} + u^{(3)}_{school(i)} + u^{(4)}_{LEA(i)}$$

$$u^{(4)}_{LEA(i)} \sim N\left(0, \sigma^2_{u(4)}\right)$$

$$u^{(3)}_{school(i)} \sim N\left(0, \sigma^2_{u(3)}\right)$$

$$u^{(2)}_{OA(i)} \sim N\left(0, \sigma^2_{u(2)}\right)$$

$$e_i \sim N(0, \sigma^2_e)$$

$$LEA(i) \in \{1, \dots, J^{(4)}\}, \qquad School(i) \in \{1, \dots, J^{(3)}\}, \qquad OA(i) \in \{1, \dots, J^{(2)}\}$$

[37] This notation is selected for use with a cross-classified model as it reduces the subscripts required. For more details about this notation see Goldstein (2003, pp 193-194).

Where $Totalscore_i$ is the total Key Stage 2 (KS2) score of a student i, β_0 is the mean total KS2 score across all groups, $u^{(4)}_{LEA(i)}$ is the effect of CM i's LEA, $u^{(3)}_{school(i)}$ is the effect of CM i's school, $u^{(2)}_{OA(i)}$ is the effect of CM i's output area and e_i is the residual error term. The final line in equation 1 being the classification function that identifies the CM's LEA, School and OA unique ID.

Cross-classified multi-level models are not estimated in the same way as multi-level hierarchical-models. Hierarchical models use IGLS (iterative general least squares) or RIGLS (restricted IGLS) to estimate the coefficients for the model. Cross-classified MLMs instead use a stochastic iterative approach, called Markov Chain Monte-Carlo (MCMC) estimation, where each estimate is partly based on the previous estimate (Browne & Rashbash, 2009). Gibbs sampling is the default algorithm used for MCMC in MlwiN and requires starting values to be given (ibid). The easiest way to produce starting values is to run a naïve hierarchical model with the IGLS or RIGLS hierarchical estimation. This results in what is known as the prior distribution. This analysis used IGLS to produce the prior distribution[38] . The MCMC chain algorithm then uses the prior distribution to produce a joint posterior distribution of all of the components in the model (fixed and random coefficients, covariance matrices, residuals etc.) at each iteration of the algorithm (Goldstein, 2003). These multiple iterations lead to a sample of values from the distribution of each of the components.

[38] This is with the exception of a few models run using random slopes where IGLS generated a starting value in the level matrix equal to zero, therefore this was manually replaced with the value 0.001, see following paragraphs for more details

The Gibbs sampling process for the cross-classified model outlined in above is:

1. Begin with prior distribution calculated using a naïve IGLS hierarchical model
2. Sample a new set of fixed effects for the independent variables (capitals, area characteristics, control variables and interactions) (β)
3. Sample a new set of LEA residuals ($u^{(4)}$)
4. Sample a new set of school residuals ($u^{(3)}$)
5. Sample a new set of Output Area residuals ($u^{(2)}$)
6. Sample a new LEA classification variance
7. Sample a new School classification variance
8. Sample a new Output Area classification variance
9. Sample a new Level 1 variance
10. Compute level 1 residuals by subtractions[39]

Unlike IGLS and RIGLS estimation of hierarchical models, MCMC does not identify a 'final' model. Therefore, it is necessary to select a suitable chain length so that it is possible for a model to be close to convergence and to observe the stability of the model estimates. Methodologically, it is difficult to confirm the stability and convergence of an MCMC model with statistical values. Instead, chain monitoring statistics and residuals can be consulted.

The number of unique groups for the final sample are shown in Table 4.2 (below).

Table 4.2: The number of unique groups in the MCS at each level of the multilevel model

Group	Number of Unique IDs
Local Authorities	144
Schools	2822
Output Areas (OA)	5253
Families	6445
Children	6445

In MLMs, the levels within the model use random effects and it is this which permits the calculation of variation between groups, in particular, variation in intercepts between groups. Instead of using a multi-level model, a fixed effects model could be used. This is where dummy variables are included for the different areas, schools and LEAs included in

[39] This process is adapted for this PhD from the outline provided by Goldstein (2003, page 194)

this analysis. However, this is empirically challenging as there is a need to model three levels where both the school and OA level have many groups within them. Therefore, a MLM was selected with random effects for the different levels of analysis.

As analysis of one of the key research questions relies only on the forms of capital, child and family characteristics (all variables measured at the individual level), this could be modelled using a weighted OLS regression. However, this study will instead use a multi-level approach for this analysis as a MLM provides accurate estimates, continuity between analysis chapters[40] and additional useful information such as the remaining variance at each level of the model.

In most of the models undertaken, each of the independent variables, whether they measure a characteristic at the individual, area or school level, are included in the model as fixed effects. This means that coefficients are calculated for these independent variables for all young people with the assumption that the same effect is found across neighbourhoods, schools and LEAs. However, random effects can also be used with independent variables, allowing the relationship between the independent variable and the dependent variable to vary between groups. For example, we could allow the relationship between economic capital and attainment to vary across schools or neighbourhoods. The equation for random slopes becomes more complex as we add additional random terms (see Equation2). Random slopes are used for analysis in chapters 6 and 7 to consider whether the effect of family capital varies across neighbourhoods or schools.

As can be seen from Equation 2, a random slopes model provides two additional estimates, compared to the earlier model (Equation 1), when we allow independent variable

[40] As each analysis chapter focuses on a different level, beginning with the individual, if an MLM is used then later models that include neighbourhood and school characteristics can build upon this, sharing similar methodological characteristics.

X_1 to vary at the Output Area. As in Equation 1, there continues to be a coefficient for the independent variable X_1 (ß$_1$), plus an estimate for the variation in intercept for level 2 (σ^2_{U0}). The two additional estimates are for the variance in slopes between groups (σ^2_{U1}) and the covariance between intercepts and slopes (σ_{U01}). These four estimates need to be interpreted in conjunction with each other. The interpretation will be explained where random slopes models are undertaken in Chapter 6 (Section 5, Variation in effects across neighbourhoods) and Chapter 7 (Section 2, Variation in effects across schools).

Equation 2: Area level random slopes model with random variation on independent variable $\boldsymbol{x}$

$$Totalscore_i \sim N(XB, \Omega)$$

$$Totalscore_i = \beta_{0i}C_i + \beta_{1i}x_i$$

$$\beta_{0i} = \beta_0 + u^{(4)}_{0,\ LEA(i)} + u^{(3)}_{0,\ school(i)} + u^{(2)}_{0,\ OA(i)} + e_{0i}$$

$$\beta_{1i} = \beta_1 + u^{(2)}_{1,\ OA(i)}$$

$$u^{(4)}_{0,\ LEA(i)} \sim N\left(0, \Omega^{(4)}_{u0,0}\right)$$

$$u^{(3)}_{0,\ school(i)} \sim N\left(0, \Omega^{(3)}_{u0,0}\right)$$

$$\begin{bmatrix} u^{(2)}_{0,\ OA(i)} \\ u^{(2)}_{1,\ OA(i)} \end{bmatrix} \sim N\left(0, \Omega^{(2)}_u\right) :\ \Omega^{(2)}_u = \begin{bmatrix} \Omega^{(2)}_{u0,0} & \\ \Omega^{(2)}_{u0,1} & \Omega^{(2)}_{u1,1} \end{bmatrix}$$

$$u^{(2)}_{0,\ OA(i)} \sim N\left(0, \Omega^{(2)}_{u0,0}\right)$$

$$e_{0i} \sim N\left(0, \Omega_{e0,0}\right)$$

4.2.3 Weaknesses in the methods

This section outlines the key weaknesses in the methods used in this analysis and explains why possible solutions cannot be used.

Causality

As with most inferential statistics, the ability to infer cause and effects between variables is limited unless that data is gathered under specific conditions (i.e. experimental or quasi-experimental research designs). The MCS data is longitudinal and could have allowed the use of lagged predictor variables. However, as this research considers educational attainment at age 11 there are limited data points available. If lagged variables had been used we would have been required to use the age 11 key stage score as the dependent variable and wave 4 (age 7) independent variables. Unfortunately, the information on young people's own social and cultural capital is limited at this time point. Therefore, further analysis could be undertaken in future research using these age 11 predictors and the age-16 school attainment score.

In quantitative research, that uses OLS regressions, instrumental variables (IVs) can be used to identify causation although some weaknesses have been identified for IVs in these situations (Bound et al., 1995; Crown et al, 2011). Of particular relevance is the difficulty in finding an instrumental variable that is not a predictor of the dependent variable. In the case of education research, this is particularly difficult as many factors are related to schooling and educational attainment. There are some further reasons that made its utilisation in this research unfeasible. IVs are difficult to utilise in an MLM framework, particularly as this research uses cross-classified models. Using IVs in this analysis would require the use of macros within MLwiN and changes to be made to the modelling process.

Neighbourhood selection

One methodological issue particularly relevant to this PhD research is the neighbourhood selection problem (Dietz, 2002). This problem occurs "when the selection mechanism into neighbourhoods is not independent from the outcome studied" (Hedman & van Ham, 2012). In this case, choosing to live in a neighbourhood is made under constraints, with these constraints being certain characteristics (such as income, occupation and education) that, in other research, have been linked to young people's attainment. This selection into neighbourhoods is a statistical problem as individuals in the same area are more likely to be similar to each other and in turn, cause a correlation between neighbours and between family and neighbourhood characteristics. This can result in overestimated coefficients when only neighbourhood characteristics are included and underestimated neighbourhood coefficients when neighbourhood and family characteristics are considered.

A variety of methods have been proposed for resolving this problem of neighbourhood selection. These methods are now briefly outlined along with an explanation of why these could not be utilised in this research.

Difference in difference models can be utilised where the change in the independent variable between two time points can be attributed to the change in the dependent variable over time, in this case, controlling for time-invariant characteristics of the neighbourhood. Difference models cannot be utilised because the measurement of child's attainment is not consistent across waves, measuring different concepts (cognitive score and attainment) and on different scales. Additionally, we expect improvement in young people's attainment, therefore, this model would effectively be an improvement model. This makes it impossible to create a suitable variable for a difference in difference model as the measure at the two time points are not the same.

Hedman and Galster (2013) suggest the use of quasi-experiments with non-movers, where changes in the neighbourhood are caused by neighbours moving into the neighbourhood rather than the individual studied selecting into the neighbourhood. The sample of non-movers is large enough for separate analysis, as few families in the sample move. However, because census data is used to measure neighbourhood composition, there is a constraint caused by the ten-year period between census collections. This could be too long a period to capture meaningful change and raises the risk of missing non-linear change over time. Additionally, this PhD wishes to use multiple measures of neighbourhood making the model more complex. Finally, Hedman and Galster (ibid) suggest that choice of neighbourhood may consider future expectations for neighbourhood composition, for example, up and coming neighbourhoods. The inverse proposal is to undertake quasi-experiments with movers, however, due to the small number of movers in the MCS, the sample size would be too small to calculate such a large model with so few observations.

Although this analysis cannot statistically resolve the neighbourhood selection problem, it utilises proxy methods to identify whether there are stronger neighbourhood effects for individuals that are more or less reliant on neighbourhood (see Section 6.6, Identifying neighbourhood effects through proxy methods). This aims to show that the findings are attributable to neighbourhood and not to other individual characteristics.

4.2.4 Software

This analysis used three statistical softwares, Stata, MLwiN and MPlus, as they all have pros and cons. This section will briefly outline what software was used and why.

Stata was utilised for the majority of data preparation, including recoding variables and linking datasets. This software allows for syntax to be recorded, meaning that any changes to the original dataset (for example changing groupings or reverse coding a variable) are

documented. As this project required the linkage of a large number of datasets, it was also seen to be the best software to undertake this in as merging reports are produced. Stata was also used to undertake descriptive analysis (Section 4.3.3, Descriptive statistics of the working sample) and the relationships between factor scores (Section 5.2.4, Relationships between capital factors).

MPlus is a statistical software that is particularly suited to modelling latent variables. MPlus was used to create the capital factor scores used in this thesis (see Section 4.2.1 for more details about factor analysis) and was chosen over other available softwares as it can create continuous factor scores when the contributing variables are a mixture of binary, categorical and continuous.

MLwiN is the main software used to undertake the multilevel models (MLMs) presented in this thesis. As the data used is available only through the UKDS secure lab, MLwiN was seen to be the most suitable software available from within the lab for undertaking multilevel analysis. MLwiN allows complex MLMs to be modelled including those with a cross-classified structure and with random slopes on independent variables. Additionally, as cross-classified models require the use of MCMC estimation, MLwiN is able to undertake this long iterative process. As the secure lab does not have internet connectivity, analysis could not be documented through syntax, as the Stata add-on (runmlwin) could not operate in this environment.

4.3 The variables and working sample

This section outlines the variables used in this study, at each level of analysis. It begins by outlining the variables selected at the individual level followed by the area level, linking these to economic, social and cultural capital. Throughout reference is made to the working sample for certain key variables. The section ends with some relevant descriptive statistics to give the reader a better understanding of the data and sample.

4.3.1 Variables at the individual level

All the variables used in the individual level analysis are sourced from the MCS data. The variables outlined in the first half of this section, identified as economic, social or cultural capital, are used in the factor analysis, presented in the subsequent chapter, to create economic, social and cultural factor scores. There is then an outline of individual level demographic variables that have been identified as relevant to young people's attainment but are not themselves aspects of the three capitals, although they may be related to them.

For parents there are three types of cultural capital; institutionalised (educational qualifications), objectified (reading frequency, number of books) and embodied (involvement in school and homework, aspirations their child stay on at school and attend university). For children, institutionalised cultural capital is not appropriate as they have not yet passed through an educational institution to the point of gaining a qualification. Therefore, included measures (see column 1 of Table 4.3) are cultural activities (frequency reading, listening to music, doing art and crafts, visiting the library), embodied cultural capital (their educational attitudes and aspirations) and objectified cultural capital (play a musical instrument which requires access to the cultural object).

The social capital variables can also be separated into sub-groups (child, within-family and area social capital) (see column 2 of Table 4.3). Child social capital aims to capture young

people's own networks of support, whether this is in education or in the wider world (Morrow, 1999). Within-family social capital stems from Coleman's (1982a) work on social capital and education, however, this is updated for the English context and modern home life such as measuring whether a parent stays at home rather than whether the mother works. The final social capital sub-group relates to out-with family social capital, but particularly how parents interact with those around them, especially within their area or neighbourhood.

The economic variables are in the final column (Table 4.3) and group by positive economic situations, negative economic situations and assets. The first is the financial capital most often associated with classic economic research: income quintile, wealth quintile, employment status and slightly less common, the number of hours worked (capturing the part-time, full-time distinction). The second relates to negative economic characteristics: being dependent on jobseekers' allowance, child receives free school meals and debt quintile. The number of siblings can also be included in this second group because as the number of siblings rises, the economic capital available to each child potentially reduces. Finally, there are variables capturing the assets that families have to secure financial stability, that is living in rented accommodation (negative to the asset) and the number of cars.

There are four overlapping variables that could be included in multiple capitals. The first overlap is between parent educational behaviours and parent-child interaction, specifically whether the parent is interested in schoolwork. It is expected that parents who interact more with their child might be more likely to find out and be involved in their learning. The second overlap is between the area variables and economic variables, and relates to the idea that income or financial wealth is partly a deciding factor in where people live and can choose to live, and therefore, the social capital that they can or cannot build there. Hence both the number of cars and number of hours worked are included in both the economic and social capital factors. Access to cars in urban areas has been associated in the literature with middle

Table 4.3: List of individual level variables in the MCS related to economic, social and cultural capital

Cultural	Social	Economic
Frequency child reads	Friends in the same area	Live in rented accommodation
Frequency does arts and crafts	Friends same ethnicity	Highest employment of carer
Frequency listen to or play music	Parent has friends and/or family in the area	Receive jobseekers
Frequency attend the library	Good area to bring up a child	Free School Meals
Play a musical instrument	Area safe to walk and play during the day	Income quintile
Try hard at school	Experienced racism	Wealth quintile
Important to do well at school	Parent mental health – suffered from anxiety/depression	Debt quintile
Stay on at school or college at 16	Parent talk to child about things important to them	
Like school	Parent close to child	
Highest carer education	Spend enough time with child	
Attend parents evening	Work-life balance	
Parent help with homework	Work weekends	
Need a qualification to get a job worth having	Friend gender	
Want child to stay on at school or college at 16	Friends go to the same school	
Child attend university	At least one good friend	
Frequency parent reads	Work nights	
Number of books at home	Works evenings	
Parent interested in school work	Parent interested in school work	
	Number of hours worked	Number of hours worked
	Number of cars	Number of cars
	Number of siblings	Number of siblings

class families being able to socialise and access resources outside of the neighbourhood. A large number of worked hours could reduce a parent's available time to build social capital with their child. The number of siblings has been included in both the social and economic columns. The larger the number of siblings, the more thinly income is spread within the

family and the less time parents can devote to each child. These theoretically overlapping variables are initially tested in each of the associated capitals, however, are included only in the best fitting capital for use in the final model (for more discussion on this see Section 5.2, Generating the three forms of capital, page 134).

There are a further ten individual level variables (including the dummy categories) used in this analysis:

- Ethnicity (White (reference category), Black, Indian, Pakistani/Bangladeshi, Mixed and Other ethnicity) (categorical)
- Age at the time of the survey (ranges from 10-12) (categorical[41])
- Gender (reference is male) (binary)
- Has a recorded additional support need (ASN) (reference no recorded ASN) (binary)
- Language other than English spoken at home some or most of the time (reference is only English spoken at home) (binary)

These demographic variables were all selected as they are associated with both a child's attainment and in some cases, they are associated with different distributions of capital. As discussed in the literature review, certain ethnic groups are seen to outperform their White peers while others underperform. The age of the young people in the MCS during this phase of data collection ranges from 10 to 12 and is included in the model as a categorical variable. As young people are constantly developing, an age difference of as little as a year can have an impact on young people's attainment. At this age, boys tend to perform less well in school, particularly in language-based classes, while girls perform slightly less well in quantitative subjects (Hansen & Jones, 2011). ASN is often directly related to young people's ability to learn at school and in turn, directly and indirectly impacts their performance in the Key Stage test. Finally, as the Key Stage test includes an assessment of language, it was considered that

[41] Age is included as a categorical variable as there are just three possible values meaning the range in ages is small. There is also little variation in age with most CMs being 11.

those who speak another language other than English at home may have a lower level of English effecting their ability to perform in the KS2 test.

4.3.2 Variables at the area level

The area variables were selected from the English census to be proxies for the economic, social and cultural capital available in their area. Table 4.4 shows the variables and reference categories for each of the variables used at the area level. Initially area characteristics were included as continuous variables, showing the proportion of eligible residents (or in some cases households) in the area that were in a specific category. However, because some variables had very few areas with large proportions of residents in that group[42], the variables were converted into quintiles. Quintiles are created by ranking each observation of the variable from smallest to largest then breaking this down into five equal parts (in some cases the quintiles will not be perfectly equal as there may be multiple observations with the same value which need to fall into the same quintile). In this dataset, quintiles were created for the whole of England, then linked to the MCS data so that they identified what that area was like in the context of England as a whole and not just in the context of the areas sampled by the MCS. These quintiles were then included in the analysis as dummy variables, with either quintile 1 or 5 being used as the reference category.

The cultural capital available in an area is represented by two variables, the proportion of adults sixteen plus with a degree or above and the proportion of 16-24 year olds with no qualifications. The proportion of adults with a degree is a positive measure of institutionalised cultural capital while the measure of 16-24 year olds with no qualifications is a negative measure of cultural capital, that could indicate a negative role model effect for the young person based on the other young people in the area. The census does not include

[42] For example, very few output areas had a large proportion of residents who were unemployed.

information on income or wealth but does include information on occupation and housing tenure. The NS-SEC, based on the Goldthorpe schema, classifies occupations into groups, with the highest group being professional and managerial occupations. Instead of adding measures for each occupational grouping, the proportion in the area in these elite positions was used to capture the high-income groups. The proportion of unemployed residents is used to capture the opposite end of the spectrum. In a similar way, tenure was operationalised as the proportion of owner-occupied housing. These measures act as a proxy for income and wealth in the area. The number of cars in an area partly represents economic capital, however, this is operationalised as the number of households with no access to a car. Therefore, it represents those that cannot as easily get out of the local area to use services or to build social relationships. This could mean that they are more exposed to the area directly around their house. Each of these variables were transformed into quintiles in the manner described above.

The final variables are measures of ethnicity in the area. The census gives a lot of detail on ethnicity although very few areas have high levels of one ethnicity other than White. The purpose of including ethnicity in the model is to see whether bridging or bonding social capital in the neighbourhood has a positive or negative effect for young people. This cannot be determined by just knowing the proportions of each ethnicity in the area. Instead, an interaction term between the ethnicity of the individual and the proportion of that ethnicity in the area (bonding), or the proportion of the population that are White (bridging), must be created. If a statistically significant positive coefficient is found then a positive effect of bonding/bridging social capital can be determined. Inversely, if a statistically significant negative coefficient is found then a negative effect of bonding/bridging social capital can be determined. Therefore, to create meaningful interactions, the grouping of the census must reflect the ethnic groups in the MCS.

The Census has a lot of detail on ethnicity, breaking down ethnic groups into the smallest groupings such as White Irish or Caribbean. This detail allows manual aggregation of the groups to reflect the six ethnic groups identified in the MCS, White, Mixed, Black, Indian, Pakistani/Bangladeshi and Other ethnicity. This is slightly different to the common Census aggregation that has an additional group, 'other Asian'. In this analysis, 'other Asian' has been assigned to the 'Other' ethnicity group. In the analysis, White is used as the reference group.

Ethnicity has not been turned into quintiles so that more understanding can be gained from the interaction term. The interaction term remains continuous when interacting the individual's ethnicity with the proportion of that ethnic group in their neighbourhood. It allows us a better understanding of the prevalence of an ethnicity within the neighbourhood. Additionally, as there are five minority ethnic groups there would need to be five interaction terms for each ethnic group if quintiles were used.

Table 4.4: List of area level variables in the English Census related to economic, social and cultural capital

Variable	Description of variable before quintiles	Reference Category
Degree Q1-Q5	Proportion of adults 16 and older with a degree or above.	Q1 – least % people with degrees
No Car Q1-Q5	Proportion of households with no access to a car	Q5 – most % people with no cars
No Quals Q1-Q5	Proportion of 16-24 year olds with no qualifications	Q1 – least % of 16-24 with no qualifications
Unemployed Q1-Q5	Proportion of residents unemployed	Q5 – most unemployed people
Owned Q1-Q5	Proportion of households that own their house	Q1 – least owned properties
Elite Q1-Q5	Proportion of adults in professional and managerial occupations (highest NSSEC category)	Q1 – least elite adults
Ethnicity	Proportion of individuals in the OA in that ethnic group. (White, Mixed, Black, Other, Pakistani/Bangladeshi, Indian)	White ethnicity

4.3.3 Descriptive statistics of the working sample

This section gives a brief outline of the key demographics of the working sample at the individual (ethnicity, gender, ASN, language spoken at home) and neighbourhood (unemployed, elite, owned, car access, no qualifications, degree) levels. It will also give a brief overview of the dependent variable, Total Key Stage 2 Score, showing its normal distribution. Finally, it will consider the attainment of young people in the sample with different characteristics by presenting the mean Total Key Stage 2 Score for different groups of the sample. This builds on the literature around performance differences across ethnic groups and genders.

The MCS sample's Characteristics

The working sample includes 6445 Children of the Millennium; all of the following statistics refer to this working sample and exclude siblings and those without neighbourhood or attainment data. The tables present weighted statistics using the probability weights provided in the MCS.

In 2011 English Census, 85.4 per cent of the population are White (calculated from the 2011 Census); therefore, the weighted sample reflects the population well. There is a large enough sample of young people from other ethnic backgrounds with the exception of 'Other ethnicity', which had just 113 responses (unweighted). Therefore, this analysis will avoid drawing conclusions around this group in later analysis due to the small number of observations. The sample is roughly half male and half female, with slightly more males than females. A surprisingly small proportion of the sample spoke another language at home sometimes or all the time, with most children being exposed to only English at home (91.7%). Finally, over 10 per cent of the sample had an additional support need (ASN). This reiterates the need to control for ASN in later models since it suggests that a non-trivial proportion of the sample have reasons for requiring additional support.

Table 4.5: Weighted percentages of MCS working sample by individual level demographic characteristics

Ethnicity	**Per Cent**
White	85.38
Mixed	3.34
Indian	2.19
Pakistani and Bangladeshi	4.72
Black	2.94
Other	1.43
Gender	
Male	50.36
Female	49.64
Language at home	
Not always English spoken at home	8.32
Only English spoken at home	91.68
ASN status	
No ASN	89.85
ASN	10.15

Table 4.6: Weighted percentages of MCS working sample by area level characteristics

Quintiles	**Unemployed**	**Elite**	**Owned**	**No Car**	**No Qualifi-cations**	**Degree**
Q1	19.58	23.98	17.74	21.82	15.41	25.87
2	20.51	21.28	19.84	21.58	19.89	21.70
3	17.68	20.25	20.34	21.05	20.60	19.34
4	19.89	18.22	20.46	19.28	21.36	18.66
Q5	22.35	16.27	21.63	16.27	22.73	14.44

Table 4.6 shows the distribution of the sample between areas with different characteristics. For the positive area characteristics (such as elite professions, own property and degree) then quintile 1 includes the most deprived neighbourhoods. While for the negative area characteristics (unemployed, no access to a car and no qualifications) then quintile 5 includes the most deprived neighbourhoods. As can be seen, there is a higher proportion of the sample in the more deprived quintiles than the less deprived. The

proportion of young people in the sample living in areas in the top quintile for degrees is particularly low.

Table 4.7: Proportion of the neighbourhood population that is White by the CM's ethnicity

Child's ethnicity	Mean
White	92.6
Mixed	76.1**
Indian	54.0**
Pakistani/Bangladeshi	41.7**
Black	49.8**
Other ethnicity	53.9**

** = Significant difference (p<0.05) between ethnic minority group and White ethnic group

As the neighbourhood ethnic composition is captured as a proportion of the residents in the neighbourhood, it cannot be presented in the same manner as the other area and individual characteristics. Instead, the weighted mean proportion of White residents is calculated for each ethnic group in the MCS[43]. Table 4.7 clearly shows that minority ethnic people are much more likely to live in an area where a smaller proportion of the residents are White. This is particularly obvious for Pakistani/Bangladeshi and Black young people.

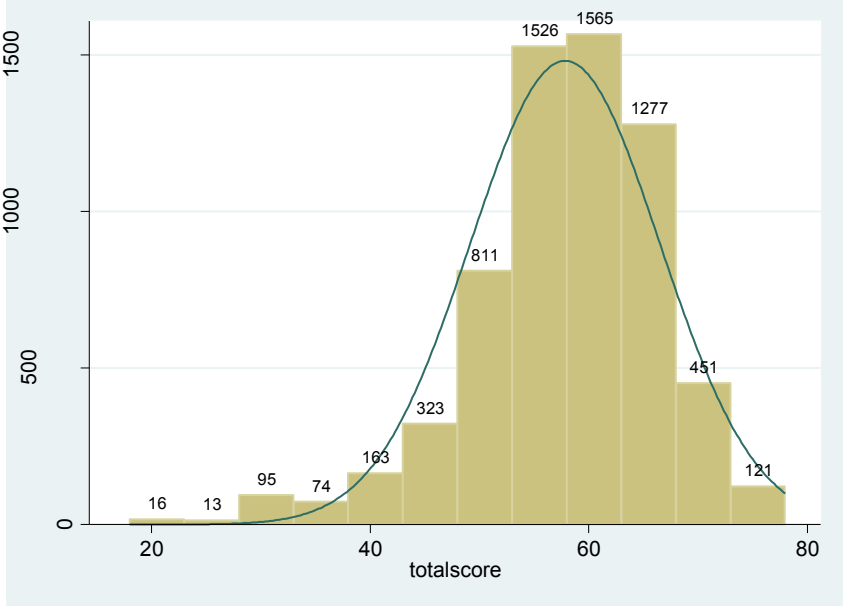
The dependent variable in the MCS sample

The dependent variable is the standardised Total Key Stage 2 score (from now referred to as attainment or KS2 score). It ranges from a minimum of 10 to a maximum of 80 and is roughly normally distributed (Figure 4.3)[44]. The following table (4.8) states the weighted mean scores across different demographic groups and shows whether there is a statistically significant difference between the group and the reference group (indicated with a **).

[43] This could have been undertaken for each ethnic group in the area, however, White is presented here as the is the 'majority' ethnicity in the UK

[44] Outliers are removed from the histogram shown in Figure 4.3 as histogram bins that group less than ten individuals together risks disclosing individuals' scores.

Figure 4.3: Histogram of Total Key Stage 2 Score for working sample (removing outliers)



Only Pakistani and Bangladeshi young people had a KS2 score significantly lower than the White mean KS2 score. Other ethnicity young people (mainly made up of those of Chinese and Other Asian ethnicity) scored significantly higher than the White mean score, however, as noted earlier, the sample size for this group is small.

As expected, girls score significantly higher marks than boys, although by only one point. Those with an ASN have the largest gap between the mean score for those with an ASN and those in the reference group (no ASN). When we consider the size of this group within the sample (10.2%) and this large difference in attainment, it is again emphasised that analysis must control for ASN. Finally, young people who speak a language other than English at home (some or all of the time) have a slightly lower mean KS2 score than those that speak English all of the time, but this is not statistically significant. This is reflected in later analysis and will be discussed in further depth at that point.

Table 4.8: Mean total Key Stage 2 score by individual level demographic characteristics

	Mean KS2 score
Ethnicity	
White (reference)	57.5
Mixed	56.6
Indian	58.2
Pakistani and Bangladeshi	55.1**
Black	57.2
Other	59.7**
Gender	
Male (reference)	56.8
Female	57.9**
ASN	
No ASN (reference)	58.6
ASN	46.8**
Language at home	
Always English at home (reference)	57.4
Not always English at home	56.8

* *= p<0.05

In summary, this Chapter has outlined the data, variables, sample and methods that will be used throughout the rest of this thesis. The three datasets identified will capture the different contexts that have been shown in the literature review to impact young people's attainment. The Millennium Cohort Study has a large sample of young people from England and provides a rich range of data on young people's home lives that can easily be linked to educational and geographical data. The census is the only suitable source of neighbourhood data as it provides information on all residents in the neighbourhood. Finally, the administrative education data (the National Pupil Database) provides the necessary data on young people's educational performance and school.

The following analysis will use cross-classified MLMs to answer the research questions relating to the individual (capitals and demographic characteristics) and neighbourhood contexts outlined in Section 3.4 (Research hypothesis).

Few studies have utilised all three capitals and, considering the large number of relevant variables available through the MCS, factor analysis is identified as a suitable method for both data reduction and the identification of latent variables representing the three capitals.

Analysis

The analysis undertaken for this PhD will be presented in three chapters. The first chapter will begin by outlining the most basic multi-level model (MLM), the null model, that allows the complex clustering in the data to be accounted for. The null model is identified by comparing fit statistics for a series of models that allow for the clustering of individuals at different levels within the data. The conclusion being that a model with four levels (individual, neighbourhood, school and LEA) is the best fit for the data. These levels are utilised in all future MLMs to determine the relationship between attainment and a range of independent variables, while accounting for the clustering in the data. Before developing any models considering the impact of capital on attainment, scores were created to capture the three forms of capital through factor analysis. This includes detailing the decision process involved in the creation of the ten capital factor scores (*child objectified cultural capital, child embodied cultural capital, parent embodied cultural capital, parent objectified cultural capital, area and networks, shift patterns, work-life balance, quality of parent-child time, household environment* and *economic capital*). The relationships between capital factor scores are then tested, looking at the correlations within and between capitals as well as the distribution of capitals within the sample. When the relationships between capitals are analysed it becomes clear that there are some moderate interdependencies. What is most striking is that there is clear variation in the distribution of capitals by ethnicity, income and parent education level.

These factors are then used throughout the cross-classified MLMs to consider whether economic, social and cultural capital at home impact on young people's attainment. Relationships between capital factor scores and attainment are analysed and the process of building up a model that includes all forms of capital with the final model containing all of

the capital factors and demographic variables is discussed. It is found that cultural and economic capital have a larger impact on attainment than social capital. Additionally, the importance of ethnicity and gender was also identified, finding unexpected, negative coefficients when family capital is accounted for.

The final model, focusing on individual characteristics, examines more closely the relationship between the accumulation of capitals and attainment. In particular, it inquires whether having multiple capitals has any additional impact on attainment, finding that most capitals have an independent impact on attainment. In general there is no additional impact of having multiple capitals within the home; this includes no unique role for economic capital at enhancing other capitals, as was suggested by Bourdieu in 'The Forms of Capital' (1986).

Although the models focusing on the family level characteristics use a multi-level structure, they do not include any characteristics at the neighbourhood level. Chapter 6 adds area characteristics to the models developed in Chapter 5. With regards to area characteristics, the proportion of residents in the neighbourhood who are in an *elite occupation*, *unemployed, own their residence, have no access to a car, are aged 16-24 with no qualifications* and have a *degree* are illustrated using quintiles created using the 2011 Census. In addition to this, the ethnicity of residents in the neighbourhood is included as a proportion of the total population. When these neighbourhood level characteristics are modelled independently against attainment, a significant and relatively large relationship is found between attainment and the proportion of residents with *elite* occupations, with a *degree, unemployed* and *owned* accommodation. However, it is established that, like other studies, the impact of neighbourhood on attainment is minimal when individual characteristics are accounted for. This introduces the important issue of neighbourhood selection bias, where excluding individual characteristics means that models are likely to

overestimate neighbourhood effects, while including them can lead to underestimation of neighbourhood effects.

Chapter 6 continues by considering the role of bridging and bonding capital on attainment as conceptualised through ethnicity, on attainment. These models use between level interactions between child and neighbourhood characteristics. It is found that bridging and bonding capital has a significant impact on attainment for some minority ethnic groups and not others. Furthermore, the neighbourhood mechanisms of relative deprivation and socialisation are tested for. In the case of relative deprivation, the proportion of *elite* residents interacted with *economic* capital had an additional positive impact on attainment for those with more economic capital at home and a negative effect on attainment for those with less economic capital at home. It was theorised that collective socialisation may work through neighbourhood cultural capital, therefore an interaction was undertaken between *parent objectified cultural capital* and *degrees*. Instead of finding collective socialisation, there is instead a similar relative deprivation effect found for cultural capital, with those staying in high cultural capital neighbourhoods having an additional positive effect on attainment for children from high cultural capital families. Finally, random slopes models are undertaken, allowing the relationship between attainment and a range of variables to vary across neighbourhoods. It is found that the relationship between attainment and *economic capital, parent embodied cultural capital, parent objectified cultural capital* and ethnicity varies across neighbourhoods.

Section 6.6 (Identifying neighbourhood effects through proxy methods) considers the direction of the relationship between neighbourhood and attainment. While this research could not account for neighbourhood selection, it tests whether the relationship between neighbourhood is stronger for those more fixed in the neighbourhood, both over time (have lived there longer) and reliance due to a lack of mobility. For young people who have not

moved it is found that there are slightly stronger effects of neighbourhood, suggesting that neighbourhood does have some direct effect on attainment.

While Chapters 5 and 6 provide an answer to the main research question, 'what is the effect of economic, social and cultural capital at home and in the neighbourhood on attainment?', the final chapters aim to understand these relationships in more detail. Chapter 7 begins by adding the only school level variable available, school type. It finds that neither *academy* nor '*Other school*' type has a significantly different relationship to attainment than community schools. *Special schools and Pupil Referral Units* have a large significant, negative coefficient over and above the negative coefficient associated with having an *ASN*. To complement the analysis of schools, random slopes models were undertaken on the school level determining whether the relationships between attainment and *parent embodied cultural capital*, *parent objectified cultural capital, economic capital*, ethnicity and *gender* vary across schools. It is found that *parent embodied cultural capital, parent objectified cultural capital, economic capital, ethnicity* and *gender* have different relationships to attainment depending on the individual's school.

Chapter 7 continues by analysing the data from a longitudinal perspective and includes measures from wave 2 of the Millennium Cohort Study. This analysis is only undertaken in the final section due to a large decrease in sample size. It is found that just a few measures from early childhood have an independent impact on young people over and above wave 5 variables. It is also found that the effect of *economic capital* in wave 5 is much less when we include economic capital proxies collected at wave 2.

Chapter 5: Family capital – distribution and relationship to attainment

The focus of this chapter is in answering the research question: whether social, cultural and economic capital at home has a positive relationship to attainment for young people in England. It will begin by outlining the null model that will be used throughout this thesis, confirming the data structure outlined in the methodology chapter. Before continuing to analyse the relationship between the three forms of capital and attainment, factor scores are created to allow for the use of the large number of variables representing the three forms of capital. Models identify which capitals have the strongest relationships to attainment and whether the accumulation of capitals has any additional effects on attainment.

5.1 The Null Model – Investigating the data structure

To verify the expected data structure outlined in Chapter 4, a series of models are undertaken to determine whether a MLM is required and, if so, to find the best model structure for the data. To answer the main research question, descriptive variables are required at both the individual and neighbourhood level. Additionally, schools are known to be important predictors of attainment, while the complex array of schools and attainment patterns by region means consideration should be given to larger, administrative areas. This section tests the need for these four levels (LEA, School, Output Area and Child) when investigating young people's attainment. The empty MLM that contains no descriptive variables but accounts for the clustering in the data is known as the null model and functions as a starting point by which to compare later, more complex models.

In order to gauge the superiority of each model, the model fit statistics can be compared. The log-likelihood and the Deviance Information Criterion (DIC) statistic are both used, where a lower value on the log-likelihood or DIC indicates a better fitting model. The rule of thumb when deciding whether the model is significantly better than another is if the log-likelihood or DIC statistic has a value at least ten points lower than the comparative model (Goldstein, 2003). If this is not the case, then both models have a similar ability to describe the variance in the data and the simplest model (with the fewest levels) should be preferred. The log-likelihood is used when the model is hierarchical and calculated using log linear estimation, while the DIC is provided when using MCMC to calculate a cross-classified model (Browne & Rashbash, 2009). These fit statistics are used to compare models throughout these analysis chapters.

Table 5.1 shows the various combinations of levels available to model in a hierarchical manner (Models A to D) and using the cross-classified method (Models E to G). Models A through to D can be modelled hierarchically because each level neatly groups within the higher level. A cross-classified model is used for Models E to G as the levels are not hierarchical given that children from the same neighbourhood can attend different schools (see Section 4.2.2 on multi-level analysis for the individual, place and school for more details). As can be seen in Table 5.1, the smallest DIC statistic is found for Model G, the four level cross-classified MLM. Overall, the cross-classified models are all better at describing the data, with Model G having the smallest DIC statistic. This is just six points lower than the simpler Model (F), failing the rule of thumb for model fit statistics. However, with the addition of the four levels all remain statistically significant and the neighbourhood and LEA levels explain a similar proportion of the variance. Therefore, as Model G explains a statistically significant proportion of variation in the dependent variable and has the best DIC statistic, then our hypothesised structure can be accepted as a suitable starting point for modelling the data.

Table 5.1: Model summaries and fit statistics for null multilevel models with all combinations of the four levels of interest (CM, OA, School, LEA)

	Model A	Model B	Model C	Model D	Model E	Model F	Model G
Fixed Part							
Random Part							
Level: Child (CM)	78.00	76.40	71.66	65.86	66.00	63.47	64.00
Level: Output Area			6.335			2.69	2.22
Level: School				12.97	11.75	12.80	11.42
Level: LEA		1.639			1.24		1.22
VPC statistics							
Level: Child (CM)	100%	98%	92%	84%	84%	80%	81%
Level: Output Area			8%			3%	3%
Level: School				16%	15%	16%	14%
Level: LEA		2%			2%		2%
-2*loglikelihood	46369.4	46317.0	46358.7	46200.5			
DIC					45994.9	45978.3	45972.0

In Model G, the majority of the variance in Key Stage 2 Score is attributed to the child level (81%), however, 14% of the variance is at the school level. The null model also attributes 3% of the variance to the neighbourhood level, suggesting that neighbourhood does have an impact on young people's attainment.

5.2 Generating the three forms of capitals

The next step in the analysis was to develop measures for the three forms of capital that included the wide range of information available through the Millennium Cohort Study (MCS). As outlined in the methods chapter, this is in order to acquire a well-rounded representation of each capital including as much information as empirically possible. This was achieved through exploratory factor analysis (EFA), undertaken using the Mplus software. This section will go through the process of developing these measures for cultural, social and economic capital.

As it is possible to combine the owner of the capital (parent, child or family) and type of capital (including the sub-types outlined in the literature review) in any number of combinations, it was necessary to first identify the number of factors to be extracted using Scree plots and the Kaiser-Guttman criterion. Additionally, this helps to improve model fit and results in a more parsimonious model removing unnecessary factors.

The Kaiser-Guttman criterion proposes that we reject any factor that has an eigenvalue of one or less (Cramer, 2003) allowing us to identify the number of 'useful' factors, retaining only those that explain enough variation in the data (ibid). In addition to this, Scree plots can be used to visually identify the number of factors to be extracted. Scree plots show the variance in the data explained by each factor. The x-axis shows each additional factor, with the first factor explaining the most variance in the data and a declining explanatory power as you move along the x-axis. This results in scree plots nearly always showing a decreasing line or curve, as the first factor always has the largest eigenvalue and the following factors are ranked by their usefulness. The y-axis shows the eigenvalues for the factors. In addition to checking the eigenvalue, we can also look for the 'elbow' or kink in the curve, where the downward curve shows a clear drop and levelling out of the eigenvalues for each additional factor. The last acceptable factor is usually indicated by this point before the drop.

In EFA, all of the variables are loaded onto each factor at various levels, with some loading with values close to zero, making them contribute little to the factor. Therefore, the larger the loading value, the more it contributes to the final factor score. The acceptable minimum loading value is 0.3 (DiStefano et al, 2009), however, loading values that lie between 0.2 and 0.3 have been left and identified in italics within the tables to show transparency about what contributes to each factor, although these particular contributions are minimal. Loadings can also take a negative value meaning that there is an inverse relationship between the variable and the latent variable (the variable underlying the factor). Where variables are contributing less than 0.2 to the factor, the values have been removed so that the factors can be more easily interpreted. All statistically significant contributions at the 90% level ($p<0.10$) are identified with a star (*), irrespective of their loading value.

Both the standard geomin (orthogonal) and oblique rotations available in Mplus were trialled in this analysis. Unlike an orthogonal rotation which forces factors to be uncorrelated, the oblique rotation allows for correlation between factors (Conway & Huffcutt, 2003, 152). As each factor is representing a subgroup of one theoretical idea (cultural, economic or social capital) it is likely that there will be some correlation between factors and so supports the use of oblique rotations. However, geomin rotations were utilised in determining the final factors as the oblique rotations did not make large improvements to model or theoretical fit. Mplus is able to calculate factor scores where values are missing by using Full Information Maximum Likelihood Estimation[45]. Therefore, factor scores are generated for all individuals, including those with some missing information. In the case where there is too much missing data for analysis to be carried out, a warning is produced. The final models use four cultural factors, five social capital factors and one economic factor. The end of this section shows the

[45] For more information on Full Information Maximum Likelihood Estimation see Kenward & Molenberghs (1998)

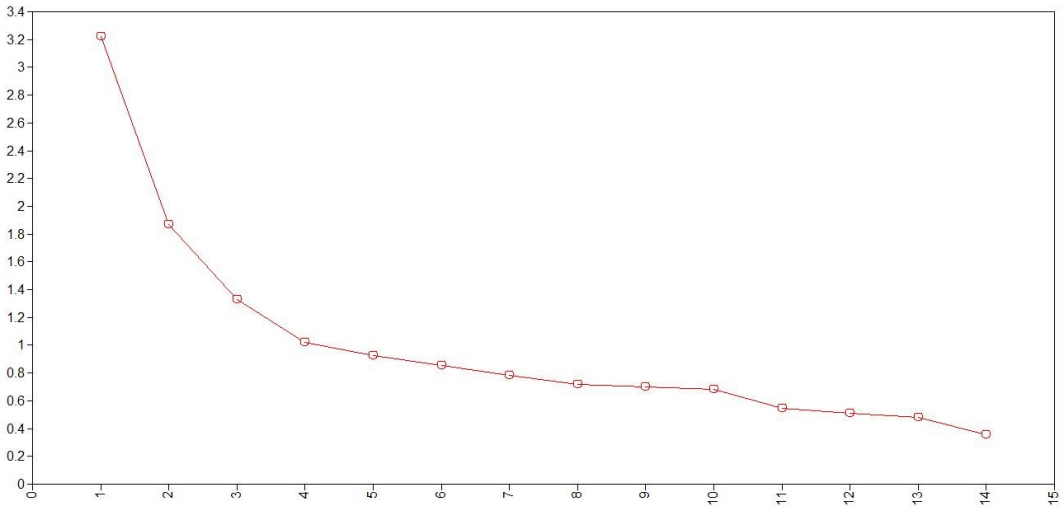
standardised factor scores for use in the analysis and outlines the relationships between each of the factor scores.

To evaluate the fit of the model, both an absolute fit index, the RMSEA (Root Mean Square Error of Approximation), and an incremental fit index, CFI (Comparative Fit Index), were consulted. Both of these are shown for all the models (including early models that are not presented in full here) to show the improvement across models. For a model to be considered an excellent fit the RMSEA should have a value of 0.01 or less, with a good fit and a mediocre fit set at 0.05 and 0.08 respectively (MacCallum, Browne & Sugawara, 1996). Others have argued that the 90% confidence interval (CI) of the RMSEA, where the lower end of the CI is close to zero and the upper end is no bigger than 0.05 (ibid), should be consulted. When evaluating the models, both the CI and values of the RMSEA suggested by MacCallum et al (1996) are considered. A CFI ranges from zero to one with values closer to one suggesting better model fit. CFI values must be greater than 0.95 to avoid misspecification (Hu and Bentler, 1999; Hooper et al, 2008) suggesting a good model fit, with values of 0.98 or above suggesting excellent model fit. One of the benefits of using the CFI is that it is less effected by sample size than other model fit statistics (Fan et al, 1999).

4.2.1 Cultural Capital Factors

Consulting the cultural capital scree plot (Figure 5.1), the Kaiser-Guttman criterion would suggest an extraction of four factors, although there is little extra variance explained when moving from a three to a four-factor model (roughly a change in the eigenvalue of 0.3) even though the fourth factor has an eigenvalue very close to 1. There is also no clear kink in the scree plot until the eigenvalue falls well below 1. Therefore, a three and four factor model are trialled to see which has the best model fit statistics and makes most theoretical sense.

Figure 5.1: Scree plot of eigenvalues for cultural capital factors



The final cultural capital model was developed by working down from the full list of cultural capital variables, presented in Table 4.3 (in the previous chapter), in a four-factor setting[46]. Two steps were taken for each factor analysis:

1) Remove variables that do not load above 0.2 on any factor. This cut off was selected even though it is less than the suggested cut off of 0.3, in the event that other changes in the factor structure could result in a higher loading value in later models.
2) Variables that were theoretically related to multiple capitals, and therefore included in initial EFAs for more than one type of capital, were removed if they were found to load with a higher value on another capital's factor. This is to avoid unnecessary correlation between capitals and results in variables only being included in economic, social *or* cultural capital.

In the case of cultural capital step one resulted in the removal of *frequency attend the library, frequency listen to or play music, attend parents' evening* and *parent help with homework*. While step two resulted in no changes for this factor analysis.

[46] A three factor setting was ruled out after comparing fit statistics and results, see Table 4.3

The four-factor model has two child and two parent factors (Table 5.2); *parent embodied cultural capital, parent objectified cultural capital, child objectified cultural capital* and *child embodied cultural capital*[47]. It can be seen that *child* and *parent embodied cultural capital* have high loadings of above 0.7 on at least one variable, while the loadings for *parent* and *child objectified cultural capital* tend to have lower loadings. The model has a very good fit to the data, improving the fit statistics when compared to previous models (see Table 5.3). Therefore, it is clear that the factors fit the data well.

Table 5.2: Final variable loadings for cultural capital factors using EFA

	Child Objectified Cultural Capital	**Child Embodied Cultural Capital**	**Parent Embodied Cultural Capital**	**Parent Objectified Cultural Capital**
	Factor 1	**Factor 2**	**Factor 3**	**Factor 4**
Frequency child reads	0.52*		*	*
Frequency does arts and crafts	0.45*		*	*
Play a musical instrument	*		*	0.31*
Try hard at school	*	0.71*	*	*
Important to do well at school	*	0.77*	*	*
Stay on at school or college at 16	*	*0.28**	*0.27**	
Like school	*0.20**	0.50*	*	
Highest carer education			*	0.58*
Parent interested in school work		0.41*	*	
Need a qualification to get a job worth having			*0.27**	
Want child to stay on at school or college at 16			0.74*	*
Child attend university			0.83*	*
Frequency parent reads			*	0.46*
Number of books at home			*	0.77*

* = p<0.10, *italic*= 0.2≤loading value<0.3, blank = loading value<0.2

[47] In later tables *parent objectified cultural capital* and *child objectified cultural capital* may be abbreviated to *Parent objectified CC* and *Child objectified CC* due to limitations in the table spacing

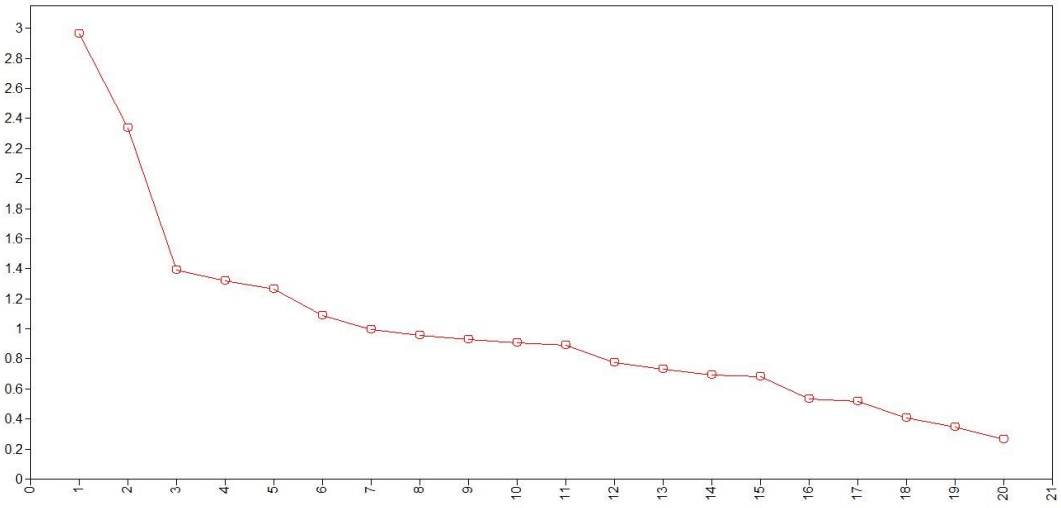
Table 5.3: Model fit statistics for EFA cultural capital models

Model	Data used	# of factors	RMSEA value	- 90% CI	+ 90% CI	CFI
Model A	Initial	3	0.031	0.029	0.033	0.965
Model B	Initial	4	0.019	0.017	0.022	0.989
Model C	Removed library & music	3	0.031	0.028	0.033	0.976
Model D	Final	4	0.016	0.013	0.019	0.994

5.2.2 Social Capital Factors

A scree plot was also undertaken with the social capital variables shown in the second column in Table 4.3. The scree plot (Figure 5.2) shows that the first three factors explain the majority of variance in the underlying factor, however, a further two factors fall well above the eigenvalue of one. There is also a visible kink in the scree plot after the fifth factor. Therefore, both a three and five-factor model were undertaken. The five-factor model was also found to have both a better model fit and a better theoretical connection when compared to a three-factor model (see Table 5.5).

Figure 5.2: Scree plot of eigenvalues for social capital factors



Procedurally, as with cultural capital, step one resulted in the removal of the *child's friends' gender* and whether the *child's friends go to the same school*. Step two resulted in the removal of the *number of cars and parent interested in schoolwork* as they loaded at a higher value in other factor models (economic and cultural respectively).

Table 5.5: Model fit statistics for EFA social capital models

Model	Data used	# of factors	RMSEA value	- 90% CI	+ 90% CI	CFI
Model E	Initial	3	0.037	0.035	0.038	0.920
Model F	Initial	5	0.025	0.024	0.027	0.971
Model G	Removed child friends' gender and same school, parent interested in school work and # cars	5	0.026	0.024	0.028	0.976
Model H	Final	5	0.024	0.022	0.026	0.985

The final social capital model contains five factors (Table 5.6) (*area and networks, shift patterns, work-life balance, quality of parent-child time, household environment*) and has an improved CFI and RMSEA when compared to all previous models (Table 5.5). There are two variables that cross-load[48] onto two factors; however, only *the number of hours* worked loads above 0.3 on both factors. *At least one good friend* does not load above 0.3 on any factor, however, does contribute a little to the *parent-child time* factor (β=0.214) so is left in the model. Most of the social capital factors have at least one variable that loads above 0.7. However, *area and networks* load multiple variables around 0.4. This suggests that the link between these variables is less strong.

[48] Cross-loading is when the same variable contributes to multiple factors. This is a negative attribute of a model as it suggests that there is a link between the involved factors, suggesting that the underlying latent variables may not be distinct

Table 5.6: Final variable loadings for social capital factors using EFA

	Area and Networks	Shift patterns	Work-life balance	Parent-child time	House-hold environ-ment
	Factor 1	**Factor 2**	**Factor 3**	**Factor 4**	**Factor 5**
Friends in the same area	0.41*		*		*
Friends same ethnicity	0.3*				
Parent has friends and/or family in the area	-0.31*	*	*	*	*
Good area to bring up a child	-0.32*		*		*0.29**
Area safe to walk and play during the day	-0.42*				*
Experienced racism	0.36*				*
Parent mental health – suffered from anxiety/depression	*		*		-0.42*
Number of siblings		*0.22**	*	*	-0.40*
Parent talk to child				0.32*	
Parent close to child				0.74*	
Spend enough time with child			0.63*	*	*
Work-life balance			0.94*		
Number of hours worked		*	0.40*		0.66*
Work weekends		0.72*			*
Work nights		0.78*			*
Works evenings		0.88*		*	
At least one good friend	*			*0.21**	

* = p<0.10, *italic*= 0.2≤loading value<0.3, blank = loading value<0.2

It should be noted that the *area and networks* factor loads positive area characteristics (i.e *area is safe, parent social networks in the area* and a *good area to bring up a child*) negatively (β=-0.42*, β=-0.31* and β=-0.32* respectively). This suggests that in this case, a positive factor score represents negative area characteristics. Therefore, for later analysis, this factor will be multiplied by negative one, so that positive values reflect positive area characteristics.

5.2.3 Economic Capital

As for the other models, a scree plot was undertaken to identify the number of factors required to explain the economic capital variables that were identified in the last column of Table 4.3, but excluding *hours worked* and *number of siblings* as these were found to contribute more to the social capital factors. The scree plot shows a steep decline in the eigenvalues (Figure 5.3) after the first and second factors, with the second factor sitting just above one. The steepness of the decline also makes it difficult to identify a kink in the scree plot. As the scree plot was not conclusive, both a one and two-factor model were trialled. However, the two-factor model had a large amount of cross-loading resulting in two similar factors that are not useful in identifying different aspects to economic capital. Therefore, the one factor model was used.

The single factor model has an acceptable RMSEA (90% CI = [0.061, 0.069]) and a good CFI (0.987). The RMSEA is more likely to be influenced by sample size, and so, due to slightly more missing values in this model (due to slightly more incomplete wealth and debt responses), the RMSEA could have been affected.

Figure 5.3: Scree plot of eigenvalues for economic capital factors

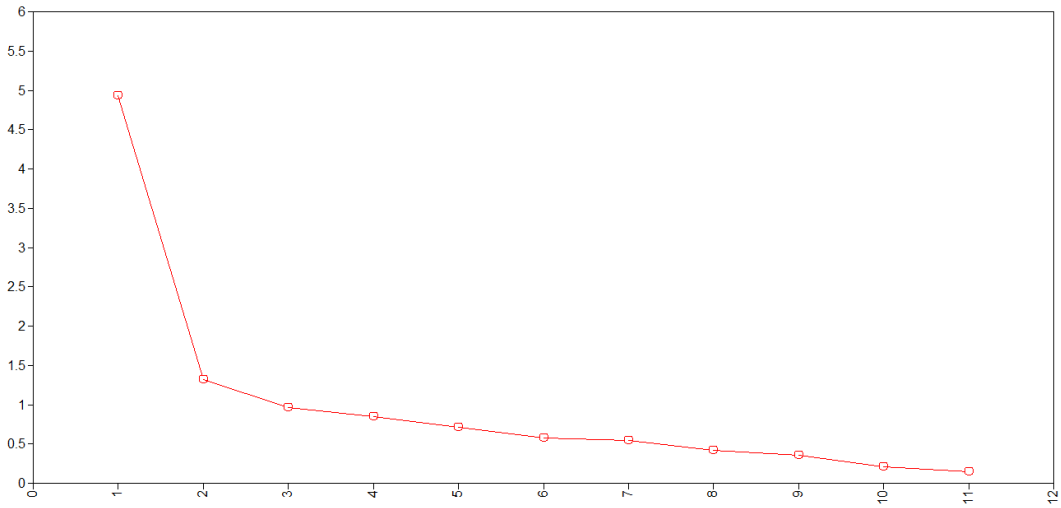


Table 5.7: Final variable loadings for economic capital factors using EFA

	Economic factor
	Factor 1
Rented accommodation	-0.859*
Highest Parent Occupational Status	0.834*
Receive jobseekers	-0.649*
Receive FSM	-0.941*
Income Quintile	0.805*
Wealth Quintile	0.639*
Debt Quintile	0.241*
Number of Cars	0.676*

* = p<0.10, *italic*= 0.2≤loading value<0.3, blank = loading value<0.2

Similar to the *area and networks* social capital factor, the *economic capital* factor loads variables both positively and negatively (Table 5.7). The largest positive loadings are found for *parent occupation* and *income quintile*, while the largest negative loadings are found for *receive FSM* and *rented accommodation*.

All of the factor scores were standardised for easier interpretation in the final models. The following section considers both the distribution of the standardised factor scores across the final sample and their relationship to each other prior to the individual level analysis.

5.2.4 Relationships between Capital Factors

This section will begin by looking at the relationships between capitals using Pearson correlations. This helps to determine the interdependencies between capitals. It also considers the distribution of capitals across the sample, focusing particularly on ethnicity and parent education. These two characteristics were selected for further analysis to help answer questions that develop throughout this analysis. This helps to gain a better understanding of inequalities in the distribution of capitals that young people face going into the education system.

Most capitals are found to have a small significant relationship to other capitals (see Table 5.8). The highest correlation was found between the two child capital factors (embodied and objectified (r=0.715*)), followed by *economic capital* and *household environment* (r=0.568*). There are also strong correlations between child capitals (embodied and objectified) and *parent embodied cultural capital*. The correlations between social capital factors are generally lower, although the correlation coefficient for *work-life balance* and *shift-patterns* is also relatively large (r=0.517) highlighting the link between these two measures.

Tables 5.9 and 5.10 show the mean capital factor scores by ethnic group of the young person. A statistically significant difference from the reference group (*White ethnicity)* is indicated with a star. The most striking finding here is that the mean cultural capital scores for *child objectified, child embodied* and *parent embodied* is significantly higher for all minority ethnic groups than for the *White ethnic* group. This is not the case for the child factors for *Mixed ethnicity* young people. It suggests that minority ethnic groups are taking part in more cultural activities as well as having higher aspirations (both parent and child). The higher aspirations of minority ethnic groups have been noted within the literature (Kao & Tienda, 1995; Barglowski, 2018; Crozier & Davies, 2006, 2007). *Parent objectified cultural capital* is only significantly lower for *Indian* and *Pakistani/Bangladeshi* young people. This is likely due to parent education level. In contrast to the findings for cultural capital factors, all minority ethnic groups have a lower mean *economic* factor score than White families with the exception of *Indian* young people where there was no difference. These findings suggest that minority ethnic families utilise the available cultural capital to compensate for a lack of economic capital. For social capital factors, variation across ethnic groups is not as strong, with the exception of *area and networks* that is lower for all minority ethnic groups when compared to *White* young people. All minority ethnic groups except *Indian* also have

Table 5.8: Pearson correlations between economic, social and cultural capital factor scores

	Child Objectified Cultural Capital	Child Embodied Cultural Capital	Parent Embodied Cultural Capital	Parent Objectified Cultural Capital	Area and Networks	Shift patterns	Work-life balance	Quality of parent child time	Household environ-ment
Child Objectified Cultural Capital	1								
Child Embodied Cultural Capital	0.715	1							
Parent Embodied Cultural Capital	0.520	0.521	1						
Parent Objectified Cultural Capital	0.341	0.109	0.372	1					
Area and Networks	0.049	0.061	*0.014*~	0.073	1				
Shift patterns	0.035	*0.005*~	0.068	0.122	-0.174	1			
Work-life balance	*-0.006*~	*-0.028*~	*0.001*~	0.089	-0.262	0.517	1		
Quality of parent child time	0.108	0.147	0.088	0.114	0.183	-0.043	-0.080	1	
Household environment	0.074	0.071	0.090	0.283	0.284	0.317	0.181	0.371	1
Economic Capital	0.136	0.079	0.187	0.506	0.230	0.173	0.171	0.168	0.568

All correlations are statistically significant ($p<0.05$) except those marked with ~

significantly lower mean *household environment* score than the *White* young people in the sample.

The mean economic, social and cultural capital factor scores by *highest parent education* are presented in Table 5.11. *Objectified cultural capital* is not analysed by highest parent education due to the strong theoretical links and the inclusion of parent education in the parent factor. The mean factor scores for both *economic* and *parent embodied cultural capital* increase step-by-step as highest parent education increases, with all being significantly higher than for those with no qualifications. For *child embodied cultural capital*, the pattern is not linear, with only those with NVQ3 and above having a significantly higher capital score than those with no qualifications. The patterns are less clear for the social capital factors, particularly the *area and networks* factor. *Quality of child parent time* has a tipping point at NVQ3 level. It is clear that as education level increases the mean value for *shift patterns* and *work life balance* increase.

Table 5.9: Mean cultural and economic capital factor scores by CM ethnicity

	Child Objectified Cultural Capital	**Child Embodied Cultural Capital**	**Parent Embodied Cultural Capital**	**Parent Objectified Cultural Capital**	**Economic capital**
White (reference)	-0.09	-0.1	-0.2	-0.01	0.03
Mixed	-0.05	-0.08	0.12**	0.03	-0.36**
Indian	0.12**	0.21**	0.65**	-0.23**	0.03
Pakistani/Bangladeshi	0.22**	0.26**	0.47**	-0.66**	-0.69**
Black	0.28**	0.35**	0.68**	-0.06	-0.75**
Other ethnicity	0.50**	0.56**	0.77**	-0.08	-0.39**

**= significant difference ($p<0.05$) between minority ethnic group and White ethnic group

Table 5.10: Mean social capital factor scores by CM ethnicity

	Area networks	Shift patterns	Work-life balance	Quality of parent child time	Household environment
White	0.11	-0.01	0.01	0.06	0.08
Mixed	-0.61**	-0.02	0.1	-0.02	-0.23**
Indian	-0.19**	-0.17	-0.17**	-0.02	0.04
Pakistani/Bangladeshi	-0.27**	-0.11	-0.38**	-0.46**	-0.93**
Black	-0.77**	0.13	0.08	-0.19**	-0.37**
Other ethnicity	-0.43**	-0.06	-0.05	-0.26**	-0.37**

**= significant difference ($p<0.05$) between minority ethnic group and White ethnic group

Table 5.11: Mean capital factor scores by highest parent education

	Economic capital	Parent embodied cultural capital	Child embodied cultural capital	Area networks	Shift patterns	Work-life balance	Quality of parent child time	Household environment
No qualification	-1.27	-0.41	-0.15	-0.25	-0.24	-0.30	-0.25	-0.86
Overseas qualification	-0.69**	-0.08**	-0.01	-0.30	0.07**	-0.08**	-0.17	-0.35**
NVQ1	-0.84**	-0.61**	-0.24	-0.13	-0.14	-0.08**	-0.08**	-0.41**
NVQ2	-0.26**	-0.4	-0.15	0.05**	-0.12**	-0.03**	0.05**	-0.04**
NVQ3	0.13**	0.03**	0.02**	0.13**	-0.10**	0.02**	0.08**	0.10**
NVQ4	0.53**	0.19**	0.01**	0.13**	0.10**	0.07**	0.08**	0.28**
NVQ5	0.82**	0.63**	0.22**	0.05**	0.31**	0.20**	0.08**	0.44**

** = significant difference ($p<0.05$) between qualification level and 'no qualification'

5.3 The Relationship between Family Capital and Attainment

This section works towards the development of a model that considers the relationship between attainment and both the three forms of capital and other relevant individual characteristics. However, it begins by briefly outlining the relationship between each capital and young people's attainment, building on the null model identified earlier. The factor scores are then modelled together to answer the research question, what is the relationship between economic, social and cultural capital at home and young people's attainment? It finds that *parent embodied cultural capital* is the strongest predictor of attainment out of all the capitals. However, this model only accounts for capital and not other individual characteristics that are known to be related to attainment. Building a model that accounts for these individual characteristics allows us to then calculate the effect of family capital net of these other characteristics.

5.3.1 Capitals and attainment

Table 5.12 shows each of the capital factor scores in a cross-classified MLM against the dependent variable, *Total Key Stage 2 Score*, calculating the gross effects of each capital on attainment. These models build on the null model (Table 5.1) containing four levels; individual, Output Areas (neighbourhood, from now referred to as OA), school and Local Education Authorities (LEAs). The reason for first calculating gross effects for each capital is to observe these relationships without interference from possible shared effects with other forms of capital. This allows identification of possible connections when multiple factors are included in the one model.

Table 5.12: Gross effects - cross-classified MLMs of family capital on attainment

Model number	Capital	Cons	β	LEA	School	Output Area	Child	DIC
1.1	Child objectified CC	57.77	2.32	1.12	9.88	1.90	60.17	45522
1.2	Child embodied CC	57.78	2.26	1.37	10.17	1.97	60.09	45534
1.3	Parent embodied CC	57.62	4.22	1.72	8.80	1.78	49.40	44316
1.4	Parent objectified CC	57.74	3.24	0.72	7.43	1.62	58.13	45179
1.5	Area networks	57.84	0.95	1.13	10.47	2.31	63.83	45923
1.6	Shift patterns	57.78	0.45	1.20	11.44	2.40	63.72	45956
1.7	Work-life balance	57.78	0.22	1.21	11.48	2.41	63.82	45968
1.8	Quality of P-C time	57.78	0.49	1.16	11.39	2.48	63.65	45954
1.9	Household environment	57.78	1.84	0.79~	9.14	1.723	63.29	45770
1.10	Economic capital	57.90	3.04	1.24	6.51	1.54	60.46	45370

~All have a significant relationship to attainment at the p<0.05 level with the exception of 'household environment' where p<0.10

It can be seen in the fourth column of Table 5.12, that each factor score has a positive, statistically significant (p<0.05[49]) relationship to attainment when modelled individually. The largest coefficients are found for *parent embodied cultural capital* (β= 4.222**), *parent objectified cultural capital* (β=3.238**) and *economic capital* (β=3.037**).

There are some interesting changes in the variation remaining at each level of the model, particularly at the school level, when comparisons are made through Models 1.1 to 1.10 with the null model. The variation remaining at the school level decreases most when the *economic* factor is considered (Model 1.10), meaning that some of the variation at the school level is explained by family economic capital. A similar change is observed for the *parent objectified cultural capital*, *household environment* and *child objectified cultural capital* models. This means that the composition of the school or the distribution of students between schools is related to the capital accessible at home. *Economic capital* and *parent objectified cultural capital* have been previously associated with which school young people

[49] From here, p-values will be indicated in the text with stars, p<0.05 = **, p<0.10 = *

attend and can possibly explain why there seems to be clustering of these two capitals at the school level (Palardy, 2008; Gibbons & Machin, 2006).

When all of these factors are included in one model (Model 2, Table 5.13) we can see that there is change in the coefficients for all variables. The factors that were found to have the largest coefficients when modelled individually remain the best predictors of attainment in Model 2 and have a smaller change in coefficient when compared to most other factors. The coefficient for *economic capital* reduces by over 50%, reinforcing the idea that there is a relationship between economic capital and one or more of the capitals in Model 2. Economic capital has been theoretically linked with both social and cultural capital, therefore, this decrease is expected.

There are a few particularly large changes within the model. The coefficient for *work-life balance* and *child's embodied cultural capital* reduce (β=0.02* and β=0.568** respectively) and *child objectified cultural capital* becomes negative but remains statistically significant (β=-0.359**), changing the direction of the relationship. It is likely that the scale of the coefficient decreases due to the variables being correlated with other capital factors[50] resulting in shared explanatory power and in turn smaller coefficients.

Regarding the coefficient for *child objectified cultural capital*, a negative, significant value is not expected. Considering the variables that load to this factor, *frequency child reads* and *frequency does arts and crafts* (see Table 5.2), it may be the case that while the behaviours within the factor are related to each other and contribute to the latent variable of young people's cultural capital, these behaviours are not similarly related to attainment. Specifically, it could be the case that due to a stronger relationship between *parent*

[50] I.e. *Work-life balance* is associated with the other work related factor, *shift patterns*, as well as *parent-child relationship* as this is reliant on time available to spend with their child. *Child objectified* and *embodied cultural capital* are theoretically linked to *parent objectified* and *embodied cultural capital.*

objectified cultural capital and children's reading habits, the positive coefficient previously attributed to *child objectified cultural capital* is now mostly accounted for by the inclusion of parent variable in Model 2, resulting in the *child objectified cultural* capital variable only capturing the less effective part, *frequency does arts and crafts*. It has been noted in the literature that, within the school, verbal and literary cultural capital is more valuable than visual or musical cultural capital since literacy is required throughout all subject areas (Sullivan, 2008). Additionally, the Key Stage 2 (KS2) test focuses on English and Maths ability, requiring little use of artistic or musical skills. Therefore, it could be the case that our outcome measure is more affected by the 'verbal and literary' forms of cultural capital rather than the 'visual and musical'.

A further notable change in Model 2 is found for the variable *shift-patterns,* which becomes negative. As shift-work often results in increased income, the positive coefficient in Model 1.6 could be attributed to the increased income associated with shift-work, meaning when Model 2 includes *economic capital*, all of the positive economic aspect of working shifts is now accounted for. This leaves only the negative aspect of shift-work, namely anti-social hours and less family time. This indicates a link between the social capital and economic capital factors.

Considering the many changes in the model when all factors are included it is clear that analysis that does not include the three capitals is likely to overestimate the effect of individual capitals. However, the specific relationships between factors remains unclear. As there are a range of theoretically related factors in this model, further models are required to test these relationships within and between capitals. To test for these links, models were undertaken running each cluster of capital factors scores followed by the inclusion of *economic capital* with both the social capital and cultural capital clusters (see Table 5.13).

The cultural capital model (see Table 5.13 Model 3.1) and social capital model (Model 3.2) show some clear changes in the coefficients for each variable when compared to Models 1.1 through to 1.4 and 1.5 through to 1.9 respectively. As in Model 2, the biggest change is found for *child objectified cultural capital*, shifting from a large positive coefficient (β=2.322**) to a small negative coefficient (β=-0.524**). This confirms that *child objectified cultural capital* is positively related to attainment yet is strongly linked to other aspects of *cultural capital*, suggesting that it may be mediated by *parent objectified cultural capital*. The coefficient for *child embodied cultural capital* also decreases (β=2.259** to β=0.733* respectively) indicating that this is also strongly influenced by the cultural capital of their parents. Both *parent embodied and objectified cultural capital* continue to have strong explanatory power and their coefficients show less change with the addition of the other cultural capital factors. The only social capital factors that remain significant (Model 3.2) are *area and networks* (β=-0.576**) and *household environment* (β=1.751**). The changes in *shift patterns*, *work-life balance* and *child-parent time* reflect those in Model 2, suggesting that the decrease in their statistical significance is due to the shared background in what they measure, namely hours at work and home, rather than the inclusion of *economic capital* in Model 2.

Models 3.3 includes both social and economic factors and Model 3.4 combines cultural and economic factors. This is to test for the relationships between capitals, as theorised in the literature. While there is a drop in the coefficient for *economic capital* when including social capital factors (β=2.813**), when compared to Model 1.10, the decrease is much larger when we consider Model 3.4 which includes cultural capital (β=1.666**). Therefore, it would seem that the link is stronger between economic and cultural capital than economic and social capital.

Table 5.13: Net effects - cross-classified MLMs of economic, social and cultural capital on attainment

Capital	2	3.1	3.2	3.3	3.4
Fixed Part					
Constant	57.737**	57.648	57.817	57.922	57.721
Child objectified CC	-0.359**	-0.524**			-0.357**
Child embodied CC	0.568**	0.733**			0.572**
Parent embodied CC	3.308**	3.332**			3.271**
Parent objectified CC	1.288**	1.998**			1.239**
Area networks	0.456**		0.576**	0.362**	
Shift patterns	-0.254**		-0.037	0.056	
Work-life balance	0.02		0.1	-0.209*	
Quality of parent child time	-0.472**		-0.188	-0.092	
Household environment	0.558**		1.751**	0.373**	
Economic capital	1.358**			2.813**	1.666**
Random Part					
LEA	0.312	0.791**	0.907**	1.378**	0.372
School	6.244**	7.578**	8.804**	6.67**	6.532**
Output Area	1.247**	1.346	0.886**	0.43	0.671
Child	47.212**	48.27**	64.055**	61.126**	48.03**
2*Loglikelihood					
DIC	43845.46	44066.49	45764.7	45354.42	43897.46
pD	712.797	792.562	669.44	560.186	657.738

** = p<0.05 , * = p<0.10

5.3.2 Creating a final family and individual characteristic model

The last part of this section outlines a more detailed model focusing on the effects of family and individual characteristics on attainment. This model contains all of the capital factor scores, used in Model 2, with the addition of individual demographic variables. The five demographic variables used are:

- Ethnicity (Mixed, Indian, Pakistani/Bangladeshi, Black, Other ethnicity, reference category is White)
- Gender (reference is male)
- Has a recorded additional support need (ASN) (reference no recorded ASN)

- Language other than English spoken at home some or most of the time (reference is only English spoken at home)
- Age at the time of the survey (ranges from 10-12, although few 12-year-olds)[51]

These demographic variables were selected as they have been found to impact on young people's KS2 attainment in the existing literature (*gender, age, language at home* and ethnicity) and their direct relationship to a young person's ability to complete some of the tasks required in the KS2 test (*ASN, age, language at home*). While the focus of this thesis is capital, it is important to account for other characteristics that may affect young people's attainment and, as shown earlier, young people's access to capital, allowing more accurate estimates of the relationship between capital and attainment to be derived.

The final model focusing on individual level characteristics, including these demographic variables, can be seen in Table 5.14. Overall, there is little change in the coefficients for the capital factors scores when compared to Model 2. This suggests that the impact of the majority of capitals are not related to the control variables used. *Parent embodied cultural capital* remains the largest positive coefficient of the three capitals (β=2.919**) followed by *economic capital* (β=1.343**) and *parent objectified cultural capital* (β= 1.215**). The *child objectified cultural capital*, *shift patterns*, and *quality of parent-child time* all have small significant but unexpectedly negative relationships to attainment. The coefficient for the *household environment* decreases, by around fifty per cent. Therefore, it is clear that there is some link between the demographic variables and the *household environment*.

When the control variables are considered, having an *ASN* has the largest negative coefficient of all the variables (β=-8.726**). This makes sense as this is very closely linked to young people's ability to perform in the KS2 test. Being from a *Pakistani or Bangladeshi* (β=-

[51] Note, *age* is included as a categorical variable as there are only three valid age options in the sample (10, 11 and 12)

2.902**), *Black* (β=-2.0**), *Indian* (β=-1.523**) or *mixed* ethnicity (β=-0.832*) has a negative effect on attainment compared to being from a *White* background when accounting for capital. According to official statistics, children (age 11) from some minority ethnic backgrounds, in particular *Black* and *Pakistani/Bangladeshi*, consistently have lower attainment than their White-British classmates, although these statistics do not account for other factors (DfE, 2018a). In Model 4, all of the minority ethnic groups (excluding *Other ethnicity*) have significantly lower attainment than *White* students when accounting for family capital. It is recognised that minority ethnic students tend to 'catch up' with their White peers, so we might expect larger performance differences at age 11 than at age 16. However, this catching up is often attributed to improved English ability and therefore better ability to learn and access the education system and curriculum. However, *English is not always spoken at home* is found to have no statistically significant relationship to attainment. It could be the case that the inclusion of ethnicity means that language is controlled for. However, not all minority ethnic individuals are from families where English is not spoken at home, while many *White* individuals are likely to be exposed to other languages at home (particularly when we consider the number of White European immigrants living in England). It could also be the case that the proportion of minority ethnic children of first-generation immigrants is higher in the sample than found in the population, as this is not accounted for and is known to have a positive impact on attainment (migrant aspirations). This raises the question, are minority ethnic children provided with less or lower quality opportunities than White children with similar capital at home.

Being *female* has a small negative relationship with attainment; this is unexpected as girls at age eleven tend to outperform boys. However, when this is compared to the coefficient when the control variables alone are included in a model (model output not shown), there is a change from a small positive insignificant to a negative coefficient. This suggests that family

capital accounts for some of the positive effect of being female. Additionally, the negative coefficient can be attributed to girls' underperformance in maths[52].

Finally, the older the young person was at the time of the interview has a positive effect on attainment, as expected.

Reflecting the small change found in coefficients, there is also little change in the VPC. The variance at all levels reduced, except the LEA where there is a slight increase, although it remains insignificant. The variance remaining at the child level continues to be much larger than that found for other levels.

Of the capitals tested, it is clear that the economic and cultural capital factors have a stronger link to attainment than the social. However, in opposition to some theories, there is an independent relationship between *all* capitals and attainment. It has been argued that the strong relationship found between cultural capital and attainment is in fact due to misspecification of models where the cultural capital measures are actually capturing aspects of economic capital, particularly those associated with parent qualifications as these are tied to occupation and income (Jæger, 2009). Fundamentally the argument is that parents who have higher education are likely to be in higher earning occupation with the associated income causing the positive impact on attainment. However, as can be seen in the model above, when we include cultural and economic variables, it is clear that they both continue to have a strong independent relationship to attainment. However, the question arises as to whether cultural and social capital are more effective when families also have economic capital. This question is discussed further in the following section (5.4, Interactions between capitals).

[52] The same model was run separately on maths score and English score and it was found that the negative coefficient for gender can be attributed to lower performance by girls in the mathematics aspect of the KS2 test.

A second conclusion is that the capital factors that measure parent capital are more influential than those measured for the child. This could suggest that interventions that focus on child cultural capital may be less effective than those that provide parents with additional capital.

Finally, the striking findings around ethnicity prompt for further investigation into the relationships between ethnicity, access to capital and attainment. This is investigated further in Section 5.5 on individual characteristics and capital.

Table 5.14: Cross-classified MLM of family capital and individual level demographic variables on attainment

	Model 4
Fixed Part	
Capital Factor Scores	
Child Objectified Cultural Capital	-0.235*
Child Embodied Cultural Capital	0.505**
Parent Embodied Cultural Capital	2.919**
Parent Objectified Cultural Capital	1.215**
Area and Networks	0.172*
Shift Patterns	-0.244**
Work-life Balance	-0.073
Quality of Child-Parent Time	-0.407**
Household Environment	0.278**
Economic Capital	1.343**
Demographic Variables	
Not always English spoken at home	-0.187
Female	-0.408**
Recorded ASN	-8.726**
Age 11	0.63**
Age 12 (ref age 10)	1.634
Mixed	-0.832*
Indian	-1.523**
Pakistani and Bangladeshi	-2.902**
Black	-2**
Other (ref White)	-0.138
Random Part	
LEA	0.114
School	5.241**
Output Area	0.441*
Child	42.464**
VPC statistics:	
LEA	0.24%
School	10.86%
Output Area	0.91%
Child	87.99%
DIC:	43057.26
pD:	607.669

**** = p<0.05 , * = p <0.10, N=6442**

5.4 Interactions between Capitals

This section addresses one of the key research questions: are capitals effective in increasing young people's attainment when they act alone? Or do they require some form of interaction with other forms of capital, especially economic capital? Do the capitals act independently or do they enhance the benefits of each other? If the latter is the case then we would expect individuals rich in multiple forms of capital to have an additional advantage. A particular focus is on the role of economic capital when combined with cultural or social capital, with some arguing that alone, cultural and social capital are less effective (Bourdieu, 1986). To test this hypothesis, interactions were undertaken between economic capital and each of the other capital factors. Interactions were also undertaken between cultural capital factors to see whether different forms of cultural capital further enhance their positive educational effect, in particular, whether parent cultural capital enhances child cultural capital.

When interacting *economic capital* with the other capital factor scores, all of the coefficients for these interactions, with the exception of *economic capital* and *work-life balance*, were small and insignificant with no changes in the rest of the model. This suggests that in general social and cultural capitals have an effect which is independent from economic capital. *Work-life balance* was found to be the exception even though it was the only capital factor score that was statistically insignificant in earlier models. When an interaction between *work-life balance* and *economic capital* was included (Model 5.1, Table 5.15), the main effect of *work-life balance* continues to be insignificant with a smaller coefficient value, while the coefficient of *economic capital* changes very little. However, the interaction term has a negative statistically significant coefficient, suggesting that *economic capital*[53] is slightly

[53] We know it must be economic capital that is less effective because it is the only variable included in the interaction that has a statistically significant coefficient.

less effective at increasing attainment when families also have a positive *work-life balance*. This suggests that economic capital generated through undertaking anti-social and increased working hours is currently buffering the negative impact of parents spending less time with their child for lower economic capital families.

When cultural capital factors were interacted in all possible combinations, only one combination was found to have an additional, statistically significant impact on young people's attainment. The interaction term between *child objectified cultural capital* and *parent objectified cultural capital* has a small positive coefficient (β=0.139*). This suggests that *parent objectified cultural capital* is required for there to be some positive relationship between *child objectified cultural capital* and attainment. This could be due to parents with higher objectified cultural capital being better able to direct their children to cultural activities that promote learning. This finding confirms the reasoning outlined in Section 5.3.1 (on capitals and attainment) for the change of coefficient for *child objectified cultural capital* between Model 1.1 and Model 3.1, where it was postulated that the change in coefficient may be due to the relationship between *child objectified cultural capital* that is effective for learning (i.e. reading compared to doing arts and crafts) and *parent objectified cultural capital*.

Therefore, it seems that different types of capital are independently able to contribute to young people's attainment and that, for most capital factors, it is not the case that economic capital enhances the relationship between cultural or social capital and attainment. In the case of *child objectified cultural capital*, *parent objectified cultural capital* is required for there to be any positive relationship with attainment.

The following section aims to investigate further the characteristics of young people that can determine access to and effectiveness of capital. When t-tests of these characteristics against these capitals were undertaken (see Section 5.2.4, Relationships between capital

factors) it was found that there were significant differences in the mean capital factor scores by gender and by ethnicity. Therefore, the following models test for the relationship between attainment and the three capitals for different sub-groups of our sample, specifically gender and ethnicity.

5.5 Individual Characteristics and Capital

It is well known that girls, at the age of our sample, tend to out-perform boys at school in England, and in addition to this, girls are also believed to have a more positive attitude to school (DfE, 2018b; Sullivan, 2001; Dumais, 2002). Therefore, interactions were undertaken between *gender* and each of the cultural capital variables. The interaction term was not statistically significant at either the 5% or 10% level for the interactions between being *female* and *child* and *parent embodied cultural capital* and *child objectified cultural capital*. In these models there was no change to the coefficients in the rest of the model when compared to Model 4. However, a small negative and significant interaction term was found for *parent objectified cultural capital* and *gender* (β=-0.359**) (see Table 5.15, Model 5.3). In addition to this, while there was no change to the coefficient for the *female* variable when compared to Model 4, the coefficient for *parent objectified cultural capital* increased slightly. When this knowledge is combined with the negative coefficient for the interaction term, it suggests that *parent objectified cultural capital* is more effective for boys than girls. This means that boys gain more educational benefit (larger increases in KS2 attainment) from their parent's cultural capital than girls.

A second set of interactions were undertaken between ethnicity and *embodied cultural capital*, both parent and child. Parent aspirations (which makes up *parent embodied cultural capital*) are one reason that minority ethnic young people are believed to do better at secondary school than their White classmates (Kao & Tienda, 1995; DfE, 2018a). Parent aspirations are then believed to influence young people in both their behaviours and their own aspirations. T-tests undertaken in the descriptive analysis in the previous chapter showed that there were significantly higher average *parent embodied cultural capital* scores

for all minority ethnic groups compared to *White* students. In these models[54], five interactions were included, between each ethnic group and *parent* or *child embodied cultural capital*. There were no statistically significant interactions between ethnicity and *parent embodied cultural capital*. This suggests that parent aspirations may not have any additional impact for young minority ethnic people over and above the positive impact found for all young people. However, a positive relationship is found between *child embodied cultural capital* and attainment for young people of *Pakistani and Bangladeshi* ethnicity (β=0.565*, see Model 5.4). Although there is a small positive relationship found for *child embodied cultural capital* across the sample as a whole (β=0.5**), for *Pakistani and Bangladeshi* young people it can be concluded that their embodied cultural capital has some additional positive influence.

When these significant interactions of variables measured at the individual level are modelled together (Model 6), the positive interaction between *child embodied cultural capital* and being *Pakistani and Bangladeshi* is no longer statistically significant. However, in the rest of the model there is little change to the other coefficients.

There continues to be unexplained variance in attainment attributed to the individual and school levels of the model, while the LEA and OA are no longer significant. In the case of the OA, this would suggest that much of the variance attributed to the neighbourhood can be explained by the individual level capitals and characteristics. The role of neighbourhoods will be discussed further in the following chapter. The large variance remaining at the individual and school levels suggest that these are the most important contexts in young people's attainment.

[54] Model 5.4 which models the interaction between ethnicity and *child objectified cultural capital* is presented in Table 5.15. The other interactions were insignificant and are not presented.

Table 5.15: Cross-classified MLMs including within-individual-level interactions

Model Number	***5.1***	***5.2***	***5.3***	***5.4***	***6***
Constant	58.713**	58.83**	58.779**	58.774**	58.74**
Capitals					
Child Objectified Cultural Capital	-0.216	-0.229	-0.24*	-0.235*	-0.223
Child Embodied Cultural Capital	0.5**	0.506**	0.512**	0.44**	0.476**
Parent Embodied Cultural Capital	2.928**	2.923**	2.908**	2.924**	2.938**
Parent Objectified Cultural Capital	1.208**	1.212**	1.396**	1.217**	1.404**
Area and Networks	0.18*	0.187*	0.18*	0.172*	0.185*
Shift Patterns	-0.244**	-0.23**	-0.243**	-0.244**	-0.231**
Work-life Balance	-0.067	-0.006	-0.07	-0.071	-0.003
Quality of Child-Parent Time	-0.407**	-0.4**	-0.409**	-0.406**	-0.399**
Household Environment	0.279**	0.28**	0.276**	0.283**	0.285**
Economic Capital	1.344**	1.303**	1.35**	1.348**	1.299**
Demographic variables					
Not always English spoken at home	-0.2	-0.154	-0.197	-0.189	-0.153
Female	-0.404**	-0.413**	-0.399**	-0.404**	-0.412**
Recorded ASN	-8.749**	-8.709**	-8.704**	-8.724**	-8.734**
Age 11	0.637**	0.631**	0.639**	0.639**	0.641**
Age 12 (ref age 10)	1.626	1.68	1.666	1.612	1.756
Mixed	-0.87*	-0.858*	-0.862*	-0.837*	-0.866*
Indian	-1.548**	-1.542**	-1.502**	-1.45**	-1.492**
Pakistani and Bangladeshi	-2.892**	-2.897**	-2.915**	-3.044**	-3.036**
Black	-2.044**	-2.032**	-2.041**	-2.158**	-2.014**
Other (ref White)	-0.225	-0.23	-0.12	0.149	-0.15
Interaction terms					
Economic capital* work-life balance		-0.265**			-0.269**
Child objectified CC*parent objectified CC	0.139*				0.149*
Child embodied CC*Mixed ethnicity				0.338	
Child embodied CC*Indian				-0.178	
Child embodied CC*Black				0.436	
Child embodied CC *Pakistani/Bangladeshi				0.565*	0.456
Child objectified CC*Other ethnicity				-0.469	
Parent objectified CC*Female			-0.359**		-0.396**
Random Part					
LEA	0.208	0.211	0.208	0.207	0.191
School	4.866**	4.869**	4.863**	5.018**	5.123**
Output Area	0.957*	0.963*	0.979*	0.503	0.402
Child	42.159**	42.118**	42.129**	42.486**	42.432**

** = p<0.05 , * = p <0.10, N=6442

5.6 Discussion

The main research question addressed in this chapter was whether each of the three forms of capital had a positive relationship to KS2 attainment for young people in England. It is clear that family economic, social and cultural capital all have an impact on young people's Key Stage 2 attainment, however, these relationships are more complicated than often presented in the literature, with variation in the relationship between capitals and attainment across individuals with different characteristics. The discussion for this chapter touches on three main areas; the relationship between capital and attainment, social mobility and social reproduction, and measurement of the three forms of capital.

The gross relationships between capital factors suggest that all aspects of social, cultural and economic capital have a positive relationship to KS2 attainment (Models 1.1 to 1.10). However, when I model net effects it becomes apparent that these relationships are weaker and do not have equal strength across the sub-types of capital, yet there continues to be a positive relationship between at least one factor and attainment from each of the capitals. This is because the gross effects of one capital may capture some of the effect of other capitals within the model, i.e. the capitals act as a proxy for other connected capitals. These differences in effect size between the gross and net models suggest that analysis that does not account for all three forms of capital is likely to be overestimating the effect size of the capitals that are included. This is also the case when we include just parent or child capitals.

Of the three capitals it is clear that cultural capital has a particularly prominent relationship with attainment, with child embodied cultural capital (attitudes and aspirations), parent embodied cultural capital (attitudes and aspirations) and parent objectified cultural capital (qualifications and cultural objects) all having a positive coefficient, even when modelled with other capitals and demographic characteristics. Embodied cultural capital (parent and child) also had a particularly strong effect in comparison to the factors that focused on

institutionalised and objectified measures (parent and child objectified cultural capital) at both the parent and child level. This confirms the need for analysis to go beyond the 'highbrow' measures of cultural capital that focus on cultural objects and qualifications (Lareau & Weininger, 2003). Additionally, it suggests policy that focuses on the distribution of cultural objects and 'highbrow' culture to children is less likely to have a major impact on attainment. Furthermore, when interactions were undertaken between child and parent objectified cultural capital, it was found that parent objectified cultural capital is necessary for children to obtain the educationally beneficial effect of child objectified cultural capital. This suggests that parent engagement may be necessary to get the most from the objectified capital provided to young people. Therefore, any policy that aims to distribute objectified cultural capital to children should involve the parents. However, it is not clear whether it is parent's capital which means that their children are able to get more from their (child) cultural capital or whether it is parent's cultural knowledge that allows them to direct their children towards cultural capital which is more relevant or conducive to educational attainment. For example, it could be that parents with more cultural capital take part in more cultural activities with their children. It could also be the case that parents with higher cultural capital direct their children to more educationally beneficial activities due to their understanding of the dominant culture.

At the opposite end of the spectrum, the lack of strong evidence to support the role of social capital is surprising when both parent-child and outwith the family social capital are included. Given the age of the children, just eleven years old, it is surprising that the contribution of the parent-child social capital factors (quality of child-parent time and household environment) are so small as parents are believed to be a main source of social capital at this age (Coleman, 1988). Further, this is theorised to be a main source of educational support for young people. The measurement of social capital is discussed in more

depth later in this section. However, it could be the case that social capital is less relevant to educational outcomes for such a young age cohort since at this age much of the parent-child relationship revolves around play and day-to-day tasks, rather than homework and school focused discussion, as may be found for older children.

Economic capital was found to have a large association with KS2 attainment, similar to that of parent objectified cultural capital. As few studies have used all three forms of capital, this is an important finding, identifying that a family's economic position does have an impact on their child's attainment, over and above the cultural objects and experiences it can buy (Jaeger, 2009). When testing for how capitals interact it becomes apparent that in general, economic capital is not required to receive a positive effect from social capital, this is in opposition to what is theorised by Bourdieu (Bourdieu, 1986), meaning it has the same association with attainment whether the family is economically wealthy or not. It is also found that it does not produce any additional positive effect for cultural capital. The only economic interaction term found to have a statistically significant relationship to attainment is between economic capital and work-life balance. This means that the benefits of social and cultural capital are available to individuals from more economically disadvantaged homes. This allows us to rebut claims that cultural and social capital act only to enhance the economic elite (Bourdieu, 1986). However, the role of economic capital should not be underestimated in the sociological field as the economic capital factor is found to have the third largest coefficient of all the capital factors.

Although this analysis does not have the primary aim of investigating social mobility, the findings of this chapter do point towards certain mechanisms functioning through the school. To begin with, the descriptive analysis of the factor scores suggests that young people do not enter school with access to the same capital at home. In order not to reproduce the current capital distribution, schools in England would be required to level the playing field in such a

way that family capital would have little influence on attainment. However, the scale of the coefficients found in this analysis suggests that to some extent, the education system is unable to counteract the inequalities existing in society in terms of the link between family capital and attainment. To strengthen the argument further, it is found that parent capital (parent objectified and embodied cultural capital and economic capital) has the strongest relationship to attainment of all of the capital factors tested. As parent capital is more important than child capital it suggests that parent social class, as captured through parent capital, contributes to the reproduction of inequalities through the school. Therefore, the social position of the parent is the most influential aspect of the capital available to young people. Furthermore, as mentioned earlier, the positive interaction term found between parent objectified cultural capital and child objectified cultural capital suggests that parents are required to guide and motivate their child's cultural capital. This means that interventions focused on providing children with the cultural capital "expected by the school" (Bourdieu, 1986) are likely to be less effective if they do not also target the parent. The coefficient for child capital alone is actually small and negative. Thus, one future focus to improve social fluidity should be on equalising the distribution of capitals between parents, particularly economic and cultural capital as these have the largest coefficients. Welfare policies to redistribute income and to improve the pay for minimum wage workers could tackle inequalities in economic capital, while targeting parent education levels could help improve young people's access to parent objectified capital.

This is further supported by analysis which included demographic variables where it became clear that the distribution of capital is shaped by other factors, in particular, ethnicity. Although this is not the key focus of this thesis, ethnicity is interconnected with capital. Descriptive analysis undertaken in Section 5.2.4 (Relationships between capital factors) shows that the quantity and type of capital available to different ethnic groups varies.

In general, there is less economic capital and more cultural capital (child objectified and embodied, parent embodied) than for White young people. This could suggest that ethnic minorities are investing in cultural capital due to more negative economic conditions. If ethnicity is not taken into account, the relationship between capital and attainment may be misinterpreted due to the unequal distribution of capital across ethnic groups. Therefore, the following sections aim to elucidate the role of ethnicity in the distribution and activation of capitals in educational attainment.

Now turning to methodological points, the use of rich measures for all three forms of capital is uncommon, with much research focusing on one form of capital and at best including proxies for the others. This chapter has highlighted the importance of applying rich, well-rounded measures to these concepts, and attempting to capture them in their broadest sense. The merits of this, in the contexts of each of the three capitals, are briefly discussed.

Firstly, it is clear that economic capital should capture more than just income and/or occupation, with other elements required in order to capture the security of property, wealth, assets and income. The factor analysis (Section 5.2.3, economic capital factor analysis) suggests income, wealth and number of cars all load highly on the positive part of this factor, showing the possible breadth of economic capital as an operationalised variable. The economic factor was found to have the third highest coefficient of all capital factors yet it could not be claimed that, for example, the number of cars has some direct impact on attainment. The use of factor analysis aimed to capture the latent underlying variable for family economic situation seems successful.

Operationalisation of cultural capital raises some further interesting methodological points. During factor analysis, the natural separation of cultural capital into the embodied and the 'objectified and institutionalised' has been useful in understanding the differences in these forms of capital.

Finally, the social capital factors were found to have the least strong relationships to attainment. While social capital as theorised by Bourdieu has been less strongly connected to educational outcomes than economic or cultural capital, the work of Coleman has found significant results connecting within and between family social capital with young people's completion of high school (Coleman, 1982a). It is certainly the case that shift-patterns and work-life balance are theoretically connected. Therefore, their coefficients may be smaller in an MLM due to shared explanatory power, even in gross effects Models 1.5 to 1.9, the coefficients remained small in comparison to those found for economic and cultural capital. This all suggests that the environments theorised to be conducive to social capital at home (and that Coleman actually referred to as social capital) are either not important *and/or* the measures are not really capturing social capital. Considering the difficulties in measuring social capital and the value of the networks parents and children are part of, it is likely that the measures used here are limited in their ability to capture social capital. Additionally, it is likely that the environments conducive to social capital are not suitable proxies for social capital itself. The area and networks factor has a very small coefficient suggesting that this also may not capture the social capital environment in the neighbourhood, therefore, the following section will expand the measures of area networks using between level interactions. Additionally, future research should aim to capture the value of children and parents' social networks, particularly aiming to capture the value of the people in their networks, possibly using the Lin Position Generator Method, although this data is not collected in many social surveys.

Chapter 6: The effects of place and capital on young people

This chapter will look at the role of place, the broader context in which a child grows up in, on attainment. This assists in answering the research question: does economic, social and cultural capital in the neighbourhood effect educational attainment in England?

There are two area-based levels within the model, Local Education Authority (LEA) and Output Area (OA). LEA is included as a level in the analysis since LEAs oversee the distribution of funding to schools and relates more closely to institutions and institutionalised cultural capital. However, no variables are used at the LEA level. All of the area level information is measured at the Output Area and stems from the census data.

The null model, developed at the beginning of Chapter 5, suggests that neighbourhood does have an impact on children's KS2 attainment, with a VPC of 2%. Section 6.1 aims to understand what characteristics of the neighbourhood are associated with young people's attainment. This is achieved by initially regressing all area level characteristics on *total key stage 2 score,* then adding the individual level controls. Section 6.2 then proceeds by adding information about young people's capitals at home. In these latter models, and as found in many other studies, the relationships previously found between area characteristics and attainment disappear.

It is found that bridging and bonding social capital are helpful concepts in relation to attainment for some minority ethnic groups, while for '*Other ethnicity*' young people, bonding social capital hinders attainment. Neighbourhood mechanisms are also tested using between level interactions, relative deprivation tested using economic capital at the area (*Elite*) and home and collective socialisation tested by interacting cultural capital in the neighbourhood (*Degrees*) and home. It is found that the proportion of elite residents has an

additional positive impact for attainment for those with high *economic capital* and a negative impact for those with less than average *economic capital*. This supports the idea that relative deprivation takes place within the neighbourhood, relative deprivation being when individuals who are more deprived, in comparison to their neighbours or peers, view their position negatively, reducing an individual's positive educational attitudes and aspirations due to their reduced self-perception in turn impacting their attainment. It is also found that the proportion of residents with a *degree* has additional positive effects when *parent objectified cultural capital* at home increases, suggesting that, instead of collective socialisation, there is an exclusion mechanism at work, with those with lower *parent objectified cultural capital* not benefitting from neighbourhood cultural capital.

The final analysis section uses area level random slopes models to see whether there is variation in the relationship between *parent objectified cultural capital, parent embodied cultural capital, economic capital* and *ethnicity* across neighbourhoods. It is found that there is clear variation in these relationships, with the impact of capitals at home varying more across neighbourhoods for deprived families than for those wealthy in capital. For ethnicity it was clear that there was variation across neighbourhoods for some ethnic groups and not others.

6.1 Area and Attainment

A modelling strategy that identifies gross effects, similar to that used for the child and family characteristics, was undertaken to consider how the different neighbourhood characteristics were related to young people's KS2 attainment. However, it is widely recognised that because of the problem of neighbourhood self-selection, there is a relationship between individual and area characteristics. This is because individuals with similar characteristics sort into the same neighbourhoods, meaning that area characteristics modelled without individual data are likely to overestimate neighbourhood effects. Therefore, this section will only refer to these direct effects models when comparing them to the more detailed models below.

It was expected that the quintiles for the proportion of residents with a degree (*degrees*) and 16-24 year olds with no qualifications (*no qualifications*) would have the strongest relationship to attainment, as these outcomes are most closely related to the dependent variable (Kauppinen, 2007). As with the capital factors, when the area characteristics were regressed individually on the dependent variable using a cross-classified MLM, all of the area characteristics were found to be statistically significant with coefficients in the direction expected (see Appendix A). However, when all of the area characteristics were modelled together, only quintiles for the proportion of elite residents (*elite*), *degrees*, owner occupied housing (*tenure)* and some of the quintiles for the proportion of residents that are unemployed (*unemployed*) were found to have a relationship to attainment. As with the capital and family characteristics models, the coefficients for all variables reduced when compared to models where each characteristic was modelled alone. This suggests that there is some shared explanatory power, where variables in the gross effects models are acting as a proxy for other related

Table 6.1: Cross-classified MLMs including neighbourhood characteristics, family capital, individual level demographic variables and between-level interactions

Model number	11	12	12.1	12.2	12.3	12.4	13
Fixed Part							
Constant	56.148	58.381	58.486	58.438	58.252	58.293	58.344
Capitals							
Child cultural capital		-0.246*	-0.255*	-0.256*	-0.244*	-0.251*	-0.252*
Child Aspirations		0.525**	0.528**	0.528**	0.522**	0.528**	0.529**
Parent aspirations for child		2.877**	2.883**	2.884**	2.874**	2.876**	2.875**
Parent cultural capital		1.149**	1.152**	1.146**	1.147**	0.957**	1.077**
Area networks		0.176*	0.17*	0.181*	0.173*	0.175*	0.177*
Shift patterns		-0.257**	-0.256**	-0.259**	-0.261**	-0.255**	-0.261**
Work-life balance		-0.063	-0.07	-0.063	-0.063	-0.061	-0.064
Quality of parent child time		-0.403**	-0.406**	-0.407**	-0.401**	-0.397**	-0.402**
Household environment		0.265**	0.25**	0.253**	0.267**	0.262**	0.259**
Economic capital		1.344**	1.34**	1.346**	1.19**	1.338**	1.269**
Demographic characteristics							
Not always English spoken at home	-0.286	-0.191	-0.182	-0.118	-0.193	-0.197	-0.153
Female	0.262	-0.394**	-0.402**	-0.405**	-0.389**	-0.395**	-0.412**
Recorded ASN	-11.32**	-8.734**	-8.773**	-8.761**	-8.738**	-8.744**	-8.761**
Age 11	0.868**	0.654**	0.641**	0.648**	0.67**	0.67**	0.659**
Age 12 (ref age 10)	0.463	1.52	1.437	1.497	1.507	1.525	1.43
Mixed	-0.149	-0.928*	-1.808**	-0.679	-0.938*	-0.936*	-1.03**
Indian	0.691	-1.513**	-0.866**	-3.893**	-1.49**	-1.506**	-3.713**
Pakistani and Bangladeshi	-1.774**	-2.67**	-3.563**	-2.348*	-2.661**	-2.677**	-3.651**
Black	-0.683	-2.36**	-2.322**	-2.937**	-2.349**	-2.37**	-2.598**
Other (ref White)	2.196**	-0.18	0.822	-2.793*	-0.157	-0.165	-1.098

Area characteristics							
Unemployed Q1 (low)	-0.7**	0.399	0.355	0.373	0.4	0.37	0.3
Unemployed Q2	-0.512	0.005	-0.042	-0.027	0.006	-0.008	-0.075
Unemployed Q3	-0.62	0.085	0.047	0.048	0.103	0.098	0.016
Unemployed Q4 (high) (ref Q5)	-0.973**	0.274	0.239	0.224	0.312	0.274	0.219
Elite Q5 (high)	2.451**	0.24	0.796	0.764	1.082*	0.811	0.846
Elite Q4	1.524**	0.6	0.626	0.592	0.577	0.637	0.487
Elite Q3	1.097**	0.647	0.613	0.578	0.71*	0.611	0.652
Elite Q2 (low) (ref Q1)	0.375	0.816	0.255	0.231	0.344	0.241	0.256
Owned Q2 (low)	0.433	-0.047	0.112	0.108	0.124	0.123	-0.034
Owned Q3	1.431**	0.482	0.396	0.404	0.418	0.408	0.513
Owned Q4	1.547**	0.399	0.478	0.499	0.501	0.489	0.425
Owned Q5 (high) (ref Q1)	1.496**	0.109	-0.052	-0.045	-0.041	-0.048	0.123
No car Q4 (high)	0.099	-0.082	-0.113	-0.091	-0.081	-0.075	-0.095
No car Q3	-0.262	-0.535	-0.557	-0.558	-0.536	-0.529	-0.541
No car Q2	-0.84	-1.1**	-1.125**	-1.119**	-1.112**	-1.094**	-1.108**
No car Q1 (low) (ref Q5)	-0.672	-0.937*	-0.96*	-0.953*	-0.966*	-0.937*	-0.957*
16-24 no qual Q2 (low)	-0.113	-0.027	-0.025	-0.019	-0.022	-0.033	-0.013
16-24 no qual Q3	-0.013	-0.053	-0.095	-0.084	-0.074	-0.076	-0.053
16-24 no qual Q4	-0.174	-0.068	-0.059	-0.049	-0.059	-0.076	-0.095
16-24 no qual Q5 (high) (ref Q1)	-0.308	-0.003	-0.035	-0.019	-0.032	-0.029	-0.039
Degree Q5 (high)	2.736**	0.432	0.422	0.433	0.457	0.562	0.582
Degree Q4	1.801**	0.23	0.241	0.248	0.219	0.2	0.178

Degree Q3	0.988**	-0.01	-0.007	-0.006	0.004	0.081	0.053
Degree Q2 (low) (ref Q1)	0.471	-0.078	-0.085	-0.097	-0.082	0.01	-0.056
% Mixed	0.061	0.056	0.048	0.05	0.058	0.058	0.057
% Black	0.009	0.008	0.004	0.013	0.008	0.008	0.008
% Other	-0.018	-0.008	0.053	0.01	-0.007	-0.007	0.055
% Pakistani/Bangladeshi	0.001	-0.008	-0.035**	-0.012	-0.009	-0.009	-0.025
% Indian	0.004	-0.001	0.009	0.016	0	-0.001	0.015
Between level interactions							
% Mixed*Mixed			0.233				
% Black*Black			-0.002				
% Other*Other			-0.202**				-0.16
%Pakistani/Bangladeshi* Pakistani/Bangladeshi			0.041**				0.031
% Indian*Indian			-0.032				
% White*Mixed				-0.005			
% White*Black				0.007			
% White*Other				0.049*			0.031
% White* Pakistani/Bangladeshi				-0.013			
% White*Indian				0.041**			0.039**
Economic capital*Elite Q5					-0.062		
Economic capital*Elite Q4					0.553*		0.423
Economic capital*Elite Q3					0.096		
Economic capital*Elite Q2					0.213		
Parent CC*Degree Q5						0.145	
Parent CC*Degree Q4						0.571*	0.39

Parent CC*Degree Q3						0.04	
Parent CC*Degree Q2						0.287	
Random Part							
LEA	0.091	0.126	0.13	0.14	0.15	0.14	0.181
School	5.879**	5.015**	4.883**	4.863**	5.09**	5.129**	4.845**
Output Area	1.239*	0.733	0.57	0.59	0.649*	0.649*	0.727**
Child (# of observations)	54.681**	42.317**	42.52**	42.513**	42.325**	42.299**	42.3**
-2*loglikelihood:							
DIC:	44712.88	43081.32	43084.4	43085.35	43082.5	43081.08	43073.34
pD:	635.65	654.992	628.001	629.479	654.649	657.162	649.774

**=p<0.05, *=p<0.10, N=6445

neighbourhood characteristics[55]. A positive coefficient was found for the highest quintile (Q5) of *degrees* (β=2.757, p<0.05), and a similarly large coefficient was found for the highest quintile (Q5) of *elite* (β=2.974, p<0.05). However, unexpectedly, *no qualifications* had no significant relationship to attainment for any quintile. This could be due to little variation between areas. For *tenure*, the coefficients have similar values across quintiles 3 (β=1.695, p<0.05) to 5 (β=1.473, p<0.05) suggesting a tipping point at which the proportion of owner-occupied housing has a significant relationship to attainment. It is interesting to note that the factors most strongly linked to economic capital in the neighbourhood (*tenure* and *Elite*) are found to be the most significant aspects of neighbourhood for attainment, thus reflecting other literature in the field (Ainsworth, 2002; Chase Lansdale et al 1997).

Finally, when demographic variables were added (Model 11), there was little change in the area level coefficients, either in scale or statistical significance. This suggests that the neighbourhood variables are not correlated with the individual level demographic variables.

[55] It is also likely that there is a relationship with other individual level characteristics and this will be explored more in Section 7.1 (Schools and attainment).

6.2 Family Capital and Place

The model developed in this section assists in answering the main research question, what is the effect of economic, social and cultural capital at home and in the neighbourhood on educational attainment? It combines the capitals, neighbourhood characteristics and individual level demographic variables.

When this model (12) is compared to that of the capitals and demographic variables (Model 4), little change is seen in the coefficients relating to family capital or individual characteristics. However, there are large changes when compared to Model 11, with most of the coefficients for the area characteristics becoming small and statistically insignificant. This shows that family and child factors have a stronger relationship to attainment than the neighbourhood. However, the loss of significance at the neighbourhood level also indicates that there are some correlations between family capital and neighbourhood characteristics, indicating the problem of neighbourhood selection bias whereby neighbourhood selection is partly dependent on family characteristics, as discussed in Chapter 4 (Section 4.2.3, Weaknesses in the methods).

In the model as a whole, the largest coefficients continue to be found for *recorded ASN* (β= -8.734, $p<0.05$), *parent embodied cultural capital* (β=2.877, $p<0.05$), *economic capital* (β=1.344, $p<0.05$) and *parent objectified cultural capital* (β=1.149, $p<0.05$). When neighbourhood capital is accounted for, it is clear that cultural and economic capital continue to be stronger predictors of attainment than social capital, however, social capital will be discussed in more depth in the following section. In general, there is very little change to the coefficients and mechanisms found to be in place in earlier models.

At the area level, the two bottom quintiles for *no access to a car* are found to have a small, negative, statistically significant relationship to attainment (β_{Q1}=-1.1, $p<0.05$). Access to transport was included in order to identify whether the ability to travel outwith the

neighbourhood had a positive impact on attainment, however, in this instance it would suggest that this in fact has a negative impact on attainment. Therefore, it could be a possibility that access to a car is capturing another aspect of neighbourhood[56]. Additionally, the remaining variance at the output area level is no longer significant, suggesting that the included area level variables capture the relevant area characteristics, even if the majority have no strong relationship to attainment.

To conclude this section, the family has a much larger impact on attainment than neighbourhood as the coefficients for the family capitals are much larger than those found for the neighbourhood characteristics. The impact of family capital is not affected by the capital available in the neighbourhood. If this had been the case then changes in the family capital coefficients between Models 4 and 12 would be evident. However, neighbourhood does have some small impact on young people's attainment independently of family capital as a significant and relatively large negative coefficient was found for quintiles 1 and 2 of *No access to a car.*

[56] A model was tested excluding *no access to cars* to see if it was capturing economic capital and therefore the coefficients for the other economic factors had become insignificant because of shared explanatory power. However, the coefficients for all other neighbourhood characteristics, after the exclusion of *no access to cars*, were found to be unchanged.

6.3 Bridging and Bonding Capital

The second main question this chapter wishes to address is whether bridging or bonding social capital, as defined in the literature review, has an impact on young people's attainment. It is believed that social capital built between individuals similar to themselves (bonding) is helpful for social support yet not always helpful for 'getting ahead' (Putnam, 2001; Granovetter, 1973). On the other hand, bridging social capital links individuals dissimilar to themselves and is believed to be helpful for 'getting ahead'.

Bonding social capital is operationalised by considering the ethnicity of the young person and the proportion of residents in the area that are also of this ethnicity. Bridging social capital is operationalised by interacting the individual's ethnicity with the proportion of *White* individuals in the area. The *White* ethnic group was selected for this interaction as this is the ethnicity of the majority of the English population[57], while all other ethnic groups are minorities in England. As the individual's ethnicity is a binary categorical variable and the proportion of individuals in the area who are a certain ethnicity is continuous, then these interactions are also continuous. Therefore, when testing for bonding social capital, the interaction term is equal to the proportion of residents of the same ethnicity as the individual in that neighbourhood. When the individual is not of the ethnicity being tested, i.e. there would be no presence of bonding social capital, then the interaction term has value zero. The reverse is the case for bridging social capital.

A small positive coefficient was found for *Pakistani/Bangladeshi* young people when the proportion of *Pakistani/Bangladeshi* residents in their neighbourhood increased (Model 12.1). Those of *Other ethnicity* experienced a small, negative effect with increased proportions of *Other ethnicity* individuals in the area. However, these findings should be

[57] 86 per cent of the English and Welsh population identified their ethnicity as White in the 2011 Census (calculated from the 2011 Census)

considered in the light of other changes in the model. The negative coefficient found for being *Pakistani/Bangladeshi* became larger when compared to the coefficient found in Model 7 (β=-3.563** compared to β=-2.67**) implying that *Pakistani/Bangladeshi* young people without bonding social capital are at a further disadvantage in terms of attainment. For those who are of *Other ethnicity*, the coefficient for being *Other ethnicity* is no longer significant suggesting that some of the negative relationship to attainment found in Model 11 can be attributed to neighbourhood ethnic composition.

When considering bridging social capital some different patterns emerge (Model 12.2). For young people who are *Indian* and *Other ethnicity* we find a very small positive coefficient for the interaction terms with the proportion of *White residents* (β=0.041** and β=0.049* respectively). There are also changes to the coefficients found in the rest of the model with the negative coefficients for *Indian* and *Other ethnicity* both becoming larger than in Model 12. Therefore, for example, if we were to compare two children of identical family capitals and demographic characteristics, but one's ethnicity was White and the other Indian, the proportion of White residents would need to be about 97% of the neighbourhood to counteract the negative coefficient found for being from an *Indian* background at the individual level. This suggests that bridging social capital is beneficial to Indian students although it could be the case that this is due to the characteristics of Indian families who live in areas with more White individuals. Additionally, a large majority network is required for it to have a major impact and to counteract non-measured structural inequalities that were not captured in this model.

6.4 Neighbourhood mechanisms – between level interactions

Does the capital available in the neighbourhood enhance or compensate for capital available at home through the mechanisms of relative deprivation or collective socialisation? Interactions were undertaken to test for relative deprivation and competition (*economic capital* with *elite* and *unemployed* quintiles) and collective socialisation (*parent objectified cultural capital* with *no qualifications* and *degree* quintiles). Some interactions were found to be not statistically significant and are not presented. These include: *economic capital* and *unemployed* (ref Q5[58]); and *parent objectified cultural capital* and *16-24 with no qualifications* (ref Q5)

The interactions between the area and neighbourhood characteristics that were found to be statistically significant were between *economic capital* and *elite*, and *parent objectified cultural capital* and *degrees*. If relative deprivation was to be found, whereby economic capital in the area has a negative effect for young people who have little economic capital at home, then the expectation would be a positive coefficient for the interaction term between the higher *elite* quintiles and *economic capital* at home[59]. For collective socialisation the expectation would be a negative interaction coefficient for the interaction term between the lower *degree* quintiles and higher *parent objectified cultural capital*. Conversely, the expectation would be of a higher overall impact of living in a high degree area on those with lower *parent objectified cultural capital*, and consequently a negative coefficient for higher degree quintiles.

[58] Reference category being quintile 5.

[59] Assuming a positive coefficient for economic capital and the Elite quintile, which is the case in model 12.3

Evidence for relative deprivation is found, with quintile four for *elite* interacted with *economic capital* having a small statistically significant relationship to attainment (β=0.553**). This means that students who have *economic capital* at home and who are in areas with a higher proportion of elites gain additional benefit from economic capital at home. When considering the scale of the coefficient, for those with less than average *economic capital* at home there is a less positive and, for some, a negative effect of being in quintile 4 for *elites*. When considering this for both low and high economic capital families it is clear that relative deprivation is present.

A similar result was found for parent objectified cultural capital interacted with the quintiles for *degree*, with the interaction with quintile four of *degrees* also having a small positive, significant coefficient (β=0.571**). This suggests that instead of collective socialisation, there is an exclusionary nature to cultural capital in the neighbourhood for those who have less cultural capital at home. The mechanisms in action being similar to relative deprivation rather than cultural mobilisation through collective socialisation in the neighbourhood. In neither case were the most extreme quintiles (quintile 1 or 5) statistically significant, with both interactions with quintile five having much smaller coefficients.

6.5 Variation in effects across neighbourhoods

The following models (Table 6.2) allow predictor variables, included in the fixed part of the earlier models, to have random effects between neighbourhoods. In earlier models it was assumed that independent variables have the same impact irrelevant of what neighbourhood you live in. Random slopes on the area level were undertaken with the independent variables *parent embodied cultural capital*, *parent objectified cultural capital*, *economic capital* and *ethnicity*. Random slopes on child capitals were not tested as children have little direct contact with the neighbourhood at age eleven, therefore it was considered less relevant to use random slopes models. Additionally, in Chapter 5, child capitals were found to have weaker relationships to attainment when parent capitals are accounted for. Random slopes were not undertaken on social capital factors due to their small, and in some cases, insignificant coefficients in earlier models.

In these models, the variable of interest is allowed to vary in its slope and intercept at the area level. This results in multiple estimates in the variance matrix. In the case of ethnicity, multiple random slopes are necessary as it is a categorical variable with *White* as the reference category. Due to the large covariance matrix the model including ethnicity is harder to interpret.

6.5.1 Parent Embodied Cultural Capital, Parent Objectified Cultural Capital and Economic Capital – Variation between areas

Model 15 allows the relationship between *parent embodied cultural capital* and attainment to vary between areas. As noted in the previous section, of all of the capital factors, *parent embodied cultural capital* is the strongest predictor of attainment. A significant, positive variance in both the intercept (σ^2_{U0}=3.637**) and slope (σ^2_{U1}=4.073**) is found. When comparing the OA variance to that found in Model 14 it can be seen that the

variance remaining at the Output Area is now larger and more significant. A significant negative intercept-slope covariance (and intercept slope correlation) is found suggesting a fanning in of regression lines across output areas (σ_{U01}=-3.439**). This means that in areas with a higher than average *parent embodied cultural capital* (and therefore a higher y-axis intercept), the relationship between *parent embodied cultural capital* and attainment is less strong, culminating in a flatter slope. It was also observed that when plotting *parent embodied cultural capital* (a standardised factor score) against the level 2 variance, there is more variation in attainment across areas for young people with less than mean *parent embodied cultural capital* score than those with above mean *parent embodied cultural capital* score (not shown due to disclosure control). A significantly better DIC value is found for Model 15 when compared to Model 14. There were also some additional changes in the models; *child objectified cultural capital* and quintile 1 of *no access to a car* are no longer significant.

Models 16 and 17 allow for the relationship between *parent objectified cultural capital* and attainment, and *economic capital* and attainment to vary between areas. Similar to Model 15, both models find a significant, positive variance in both the intercept and slope (see Table 6.2). Reflecting Model 15, a significant negative intercept-slope covariance (and intercept slope correlation) was also found, suggesting a fanning in of regression lines across output areas. This means that in areas with a higher than average capital score, the relationship between capital at home and attainment is less strong, with a flatter slope. In turn, this results in more variation across areas for families with lower capital at home. A significantly better DIC value is found for Models 16 and 17 when compared to Model 14. There are also some additional changes to Model (17) with the third quintile for the proportion of elite residents (*Elite* Q3) and bonding social capital for *Pakistani and Bangladeshi* young people becoming significant, although there is little change in the scale of the coefficients.

Considering the results of these models together, it implies that neighbourhood may have a more defining role in the attainment of young people from low capital families, however, the number of low capital families in the higher average capital areas cannot be determined. It is also clear that there is less variation across neighbourhoods for higher capital families which could suggest that families with higher capital tend to be able to buffer negative neighbourhood environments.

6.5.2 Ethnicity – Variation between areas

As ethnicity is a categorical variable, with multiple categories, the matrix for Model 18 is more complex to interpret. Compared to the other random slopes models, the intercept variance for the output area level is much smaller (σ^2_{U0}=0.176*). The slope variance for each ethnic group when compared to the reference group is positive and statistically significant. However, the size of the coefficient is small for both *Black* (σ^2_{U4}=0.019**) and *Other ethnicity* (σ^2_{U5}=0.005**) young people. This suggests that the neighbourhood has less impact on *Black* and *Other ethnicity* young people's attainment, although it should be noted that the large negative coefficient found for black students' means that they face similar negative outcomes across areas. The covariance between ethnicities is not significant for all ethnic groups; this means that while there is variation in slopes across ethnic groups, the steepness of the slope is not related to the intercept for the neighbourhood.

Table 6.2: Summary of cross-classified MLMs with area level random slopes on parent cultural capital, economic capital and CM ethnicity

Model name	**15**	**16**	**17**			**18**		
Random variable	Parent Aspirations	Parent CC	Economic Capital	Mixed	Indian	Pakistani/ Bangladeshi	Black	Other
Output area	3.637**	2.813**	3.129**	0.176*				
Intercept-slope covariance	-3.439**	-2.421**	-2.702**	0.104	-0.131	0.307	-0.018	-0.006
Variance of random variable	4.073**	2.625**	2.859**	14.359**	4.183*	14.236**	0.019**	0.005**
Line pattern	Fanning in	Fanning in	Fanning in	No pattern	No pattern	No pattern	No pattern	No pattern
LEA	0.216	0.227	0.188	0.136				
School	4.192**	4.391**	3.999**	4.773**				
Child	35.837**	37.952**	37.805**	41.344**				

Note: Model 18 all covariances are between the constant and the ethnic group, rather than between minority ethnic groups

6.6 Identifying neighbourhood effects through proxy methods

This section undertakes three sets of cross-classified MLMs that aim to identify the presence of neighbourhood effects by running the same model on different sub-samples of the population that are more or less reliant on the neighbourhood (models not presented[60]). These populations include subsamples of *car/no car*[61], *friends or family in area/friends and family in area/no friends or family in area* and *moved address/not moved address*. Families with no access to a car are believed to be more reliant on the neighbourhood, therefore, we may expect larger coefficients for the neighbourhood characteristics or a larger proportion of unexplained variance at the neighbourhood level. Those with family and friends in the neighbourhood are also believed to have a larger reliance on the neighbourhood as they have concentrated networks in the area. Again, we would expect to find larger area coefficients or more remaining variance at the output area for this group. Finally, it also compared those who have moved and those who have not moved, assuming that the coefficients will be larger for non-movers as they have been exposed to the same neighbourhood for their whole childhood. There are no findings of note for either the car ownership and area networks sub-samples. This could be due to limited sample size for both the no cars (751) and no friends or family (574) sub-samples.

Movers and non-movers were found to have the most expected effects. For those that have not moved since their child was born, there is a clear pattern of increasing coefficients as the proportion of *elite* residents increases (moving from Q1 to Q5). *Elite* quintiles 3 and 5

[60] These models are not presented as they have few findings and are undertaken for methodological purposes.

[61] This variable is measured at the individual level and should not be confused with the area level measure.

have significant coefficients (β=0.898, p<0.05 and β=1.101, p<0.10 respectively). While quintile 3 for *degree* is significant for movers. The variance at the output area is small and insignificant for those who do not move. Therefore, it seems that over time, the economic capital in a neighbourhood has a significant impact on young people's attainment as there are larger coefficients found for non-movers. However, these findings are not strong enough to identify conclusively the presence of neighbourhood effects.

6.7 Discussion

In Model 4, which includes capitals and demographic variables, a small but significant proportion of the remaining unexplained variance in attainment was attributed to the place level (around 1%). This would suggest that neighbourhood characteristics may have some relationship to attainment after accounting for individual level characteristics. This chapter discussion begins by answering the main research question, what is the relationship between economic, cultural and social capital at home and in the neighbourhood on attainment? It will then briefly address the methodological challenges of answering this question. Although there are few findings for the direct relationship between neighbourhood capital and attainment, models including between level interactions suggest that certain neighbourhood characteristics do in fact matter to the attainment of some young people. Finally, there will be a discussion of further evidence provided through random slopes models which confirms that neighbourhoods do matter more for some individuals.

The initial Model (11) of neighbourhood capital suggests that there may be some relationship between capital in the neighbourhood and attainment. However, when both family and neighbourhood capital are included in the model it becomes clear that the role of neighbourhood capital is minimal when compared to that of the family, reflecting the findings of much of the neighbourhood effects literature (Brännstrom, 2008; Kauppinen, 2008; Sykes & Kuyper, 2009). This raises concerns about the viability of interpreting these results when it is known that the measures of neighbourhood are so closely correlated to the individual characteristics, particularly as a consequence of an individual's self-selection into neighbourhoods under restricted choices. Putting these concerns aside, the only area characteristic that is statistically significant is quintiles 1 and 2 of *no access to cars*, finding a negative coefficient. This measure was originally included to see if those living in areas more reliant on public transport have more reliance on neighbourhood and in turn are subject to

larger neighbourhood effects. However, it seems that this is not the case, and understanding these findings would require some further investigations which are beyond the scope of this thesis.

While this analysis suggests that there is little evidence that there is a direct relationship between neighbourhood capital and attainment for all young people. The more sophisticated analysis undertaken in this chapter suggests that certain neighbourhood characteristics do matter for some groups of young people. Firstly, ethnic bridging and bonding capital are found to have a significant relationship to attainment for some minority ethnic groups but this is not uniform across all groups. This goes against much of the theoretical literature based on Putnam's definition of social capital as against bonding social capital which is believed to have negative effects on community spirit, creating closed networks, and in turn having a negative effect on the outcomes of interest, while bridging social capital is seen to be positive (Fine, 2018). In contrast, this analysis shows that bonding social capital is having a positive effect on attainment for Pakistani/Bangladeshi young people[62] for whom it could be the case that these networks provide social support. Yet, bridging social capital[63] is helpful for Indian young people, supporting the theories of Putnam. This suggests that networks can have varying effects across contexts and that future analysis of ethnic bridging and bonding social capital should consider ethnicity in as detailed a way as possible. If analysis was carried out using 'minority ethnic' individuals as a broad definition some of these helpful but specific bridging and bonding social capital networks found in this analysis may be missed.

Further evidence to support the claim that neighbourhoods are important for some groups is that the neighbourhood mechanisms tested in Section 6.4 (Neighbourhood

[62] CM of Pakistani/Bangladeshi ethnicity interacted with proportion of Pakistani/Bangladeshi residents in the neighbourhood.

[63] CM of Indian ethnicity interacted with the proportion of White residents in the neighbourhood.

mechanisms – between level interactions) do not affect all residents equally and are dependent on the neighbourhood's characteristics. Relative deprivation, when deprived individuals do worse when living in areas with less deprived individuals, was found for those living in areas with higher levels of elite residents[64]. It was identified that those with higher economic capital gain some additional positive effect on attainment when they live in areas with reasonably high proportions of elite residents (Elite Q4), while those with less than the mean economic capital at home experience a disadvantage from living in these areas. A similar pattern to that of relative deprivation is found when investigating cultural capital at home and in the neighbourhood. Instead of finding that areas with high area cultural capital (degrees) have a positive effect for those with the least parent objectified cultural capital at home as hypothesised (collective socialisation), it is found that areas with a higher proportion of adults with degrees is more beneficial to children whose families also had high levels of parent objectified cultural capital. Again, this reiterates the point that the impact of neighbourhood is not uniform. It also suggests that, rather than social mixing in neighbourhoods functioning to bridge economic and cultural divides, capital may work to exclude those without it.

The final stage was to consider whether there were different effects of family capital across neighbourhoods. It was found that there was variation in the relationship between attainment and parent embodied cultural capital, parent objectified cultural capital and economic capital across areas. For all three capital factors modelled, there was more variation in attainment for those with access to less than average capital at home than those with access to more than average. This suggests that neighbourhoods have an impact on those with the least family capital, as more variation was found here. However, due to lack

[64] This is found for quintile 4 and not quintile 5. This may be due to so few residents having low economic capital in these very elite areas.

of clustering within the data, the extent to which individuals from lower capital families live in higher average capital neighbourhoods is unclear. At the other end of the spectrum, those from more advantaged families tend to do well irrelevant of their neighbourhood, as the neighbourhood regression lines converged as family capital increased. Additionally, it could be the case that those with more capital at home are buffering their children from the wider environment they live in by utilising that capital.

The last Section (6.6, Identifying neighbourhood effects through proxy methods) tested for neighbourhood effects using proxy methods. It is found that there are slightly stronger neighbourhood effects for those exposed consistently to the same neighbourhood (non-movers), while the effects are weaker and different for movers, as hypothesised. In particular, the economic aspect of neighbourhood (elite residents) is found to have the strongest effect for non-movers. The sub-samples do have slightly different characteristics, movers have slightly lower highest parent education levels and lower mean economic capital, however few other differences were found suggesting that the findings for the two sub-samples are not due to the characteristics of movers and non-movers.

While it is clear that family capital has a stronger relationship to attainment, the role of neighbourhood cannot be ruled out as it is evident that individual and neighbourhood characteristics are connected and specific neighbourhood contexts affect certain young people. Neighbourhoods also affect how family level characteristics impact on attainment, with large variation in intercepts and slopes across neighbourhoods. The following chapter will now include the school level as this is related to both attainment and neighbourhood. Schools are a key neighbourhood institution, even with the policy of parental choice in England, as most schools rank applications using distance criteria. Additionally, the literature suggests that analysis of neighbourhoods that does not account for schools is missing an important correlated variable.

Chapter 7: Schools

The focus of this chapter is the school level and it will begin by including the only school level information available, school type, in the model. It finds that at primary level, school type has no relationship to attainment except for *special schools and pupil referral units*. The analysis then continues by undertaking random slopes models on the school level. This is to determine whether there is variation in the relationship between *parent embodied cultural capital*, *parent objectified cultural capital*, *economic capital, ethnicity* and *gender* depending on which school the young person attends. When comparing this to the earlier random slopes models allowing variation at the neighbourhood level, stronger variation across schools than neighbourhoods is found.

The inclusion of school type creates change in the statistical significance of some neighbourhood characteristics as well as the variance remaining at the neighbourhood level. This suggests that neighbourhoods and schools are closely linked, and both should be considered in future analysis, even if models only include basic information such as school type.

The final Section (7.3) introduces a longitudinal perspective using a selection of variables measured at wave 2 of the Millennium Cohort Study, when children were aged around 3 years-old. The motivation for including a longitudinal perspective is two-fold. Firstly, the wave 2 data includes a measure of *school readiness* (Bracken School Readiness Assessment which is crucially measured prior to starting school) which allows for more in-depth analysis into the role of schools in equalising or widening the gap between young people when they start school. Secondly, proxy variables for the three forms of capital are also included from wave 2, identifying whether capital in early childhood impacts young people's attainment at the end of primary over and above the capital available to them at age eleven.

Before continuing it is necessary to outline the model which includes all interactions (Model 19, Table 6.1). This is built on throughout this chapter and brings together the individual level interactions tested in Sections 5.4 and 5.5 (interactions between capitals and characteristics) as well as the between level interactions undertaken in sections 6.3 and 6.4. In Model 19 all capital factor scores, except *work-life balance*, are statistically significant with similar coefficients to previous models. All minority ethnic groups (except *Other ethnicity*) continue to have a negative coefficient. The only area characteristics to be statistically significant when individual capitals are included are quintiles 1 and 2 of *No access to a car*.

Bridging and bonding capital for different ethnic groups is no longer significant in this model. This could be because interactions at the individual level also include ethnicity. Interactions including *economic capital* are found to have a more significant effect than other interactions. This suggests that economic capital may be particularly helpful for improving attainment when other characteristics (of the individual or place) are pertinent. In these models (Table 7.1), only the variance remaining at the school and child levels are statistically significant.

7.1 Schools and Attainment

In this section the limited school information that is available (*school type*) is added to Model 19 (Model 20, Table 7.1). School type was recoded into four categories, *community school*[65]*, academy, special school/pupil referral unit* and *other school type*. *Other school type* includes schools such as voluntary aided and religious schools which were aggregated as too few students attended them. Special schools and pupil referral units were combined as both school types support students with additional needs.

It is found that *special schools and pupil referral units* are the only school type that is statistically different when compared to *community schools* (β=-16.563**). It is important to note that the large coefficient found for *special schools and pupil referral units* have very little impact on the coefficient for *ASN*. This implies that there is a further negative effect on attainment for children who attend special schools and pupil referral units. It is likely to be the case that the needs of students in these schools are more extreme rather than special schools and pupil referral units having a negative effect on attainment.

Overall, there is no benefit to attending an *academy* or '*other school type*' primary school. This has implications for future policies that intend to transform more primary schools into academies and trust schools, given that at this point in time there was no evidence to suggest that these schools help improve young people's attainment.

When school type is included in the model interesting changes in variables related to the area are seen. The *Area and Networks* factor is no longer significant while quintile three of

[65] Community schools being local comprehensive primary schools, although not necessary the closest local school.

Table 7.1: Cross-classified MLMs including family capitals, individual level demographic variables, neighbourhood characteristics, within- and between-level interactions and school type

Model name	**19**	**20**
Fixed Part		
Constant	58.324**	58.439**
Capitals		
Child objectified cultural capital	-0.26*	-0.283**
Child embodied cultural capital	0.505**	0.554**
Parent embodied cultural capital	2.897**	2.856**
Parent objectified cultural capital	1.256**	1.219**
Area networks	0.185*	0.16
Shift patterns	-0.251**	-0.246**
Work-life balance	0.006	-0.002
Quality of parent child time	-0.388**	-0.381**
Household environment	0.264**	0.272**
Economic capital	1.209**	1.168**
Demographic Variables		
Not always English spoken at home	-0.111	-0.136
Female	-0.407**	-0.471**
Recorded ASN	-8.769**	-8.012**
Age 11	0.665**	0.708**
Age 12 (ref age 10)	1.494	1.384
Mixed	-1.048**	-1.095**
Indian	-3.59**	-3.746**
Pakistani and Bangladeshi	-3.801**	-3.918**
Black	-2.59**	-2.589**
Other (ref White)	-1.005	-1.221**
Area Characteristics		
Elite Q5 (high)	0.808	0.955
Elite Q4	0.472	0.583
Elite Q3	0.639	0.66*
Elite Q2 (low) (ref Q1)	0.238	0.186
No car Q4 (high)	-0.111	-0.097
No car Q3	-0.545	-0.501
No car Q2	-1.086**	-1.046**
No car Q1 (low) (ref Q5)	-0.955*	-0.936*
.	.	.
.	.	.
.	.	.
.		

Interactions		
% White*Other	0.03	0.032
% White*Indian	0.038	0.039**
% Pakistani/Bangladeshi* Pakistani/Bangladeshi	0.032	0.034*
% Other*Other	-0.16	-0.149
Economic capital*Elite Q4	0.466*	0.398
Parent objectified CC*Degree Q4	0.366	0.414*
Economic capital*work-life balance	-0.278**	-0.258**
Child objectified CC* Pakistani/Bangladeshi	0.495	0.533
Female*Parent objectified CC	-0.375**	-0.334**
Child objectified CC* Parent objectified CC	0.124	0.153*
School type		
Other School Type		-0.247
Academy		0.05
Special School/Pupil Referral Unit		-16.563**
Random Part		
LEA	0.132	0.159
School	4.929**	4.365 **
Output Area	0.72	1.071
Child	42.184**	40.931**
Log likelihood		
DIC:	43064.58	42885.97
pD:	657.593	676.223

Elite residents becomes significant[66]. This suggests that there continues to be a strong link between place and schooling.

In Model 20, ethnicity continues to be a strong predictor of attainment. *Other ethnicity* is now also found to have a significant negative coefficient but it is unlikely that conclusions can be drawn from this as the sample size for this group is small. Some of the ethnicity interactions that were not significant in Model 19 become significant in Model 20. Bridging capital has a small positive relationship to attainment for *Indian* young people, with a 10% increase in *White* residents having an increase in KS2 attainment of 0.4 points. For *Pakistani and Bangladeshi* young people, bonding social capital has a similarly sized positive relationship to attainment.

Parent cultural measures continue to be strong predictors of attainment. Yet when we consider other cultural capital variables (and interactions involving them) are considered it becomes clear that cultural capital has different impacts on young people's attainment depending on their other characteristics and capitals. For *female* students, *parent objectified cultural capital* continues to be less effective than for boys (β=-0.334**). It is also noticeable that *child objectified cultural capital* has a small negative relationship to attainment for all young people; however, this is less prominent if the young person also has access to *parent objectified cultural capital*. A two standard deviation change in *parent objectified cultural capital* would create a slight positive effect for *child objectified cultural capital*.

The following section is going to investigate the relationship between schools, attainment, ethnicity and capital by undertaking school level random slopes models.

[66] The interaction term with Elite and Economic capital is no longer significant, this may be why the third quintile for Elite residents becomes statistically significant.

7.2 Variation in effects across schools

In this section, the relationship between *parent embodied cultural capital*, *parent objectified cultural capital*, *economic capital*, *gender* and *ethnicity* is allowed to vary across schools by undertaking random slopes models. Similar to the models in Section 6.5 (Variations in effects across neighbourhoods), this allows not just the intercept to vary across schools but also the relationship between the dependent and independent variable to vary across schools (the slope). When we compare the findings of the following *parent embodied cultural capital*, *parent objectified cultural capital* and *economic capital* models to the random slopes models undertaken on the neighbourhood level, it is clear that there tends to be larger variation in intercepts across schools, but less variance in slopes than found in neighbourhoods. Additionally, the slope-intercept covariance is similar between school and neighbourhood random slopes models, finding a fanning in of regression lines across schools as family capital increases. For ethnicity, the picture for variance across schools is less clear, while for gender it is clear that school plays a major role.

7.2.1 Variation between schools – Parent Embodied Cultural Capital, Parent Objectified Cultural Capital and Economic Capital

Model 21.1 (Table 7.2) allows for variation in the relationship between *parent embodied cultural capital* and KS2 attainment across schools. The findings suggest that parent attitudes and aspirations are more important in some school environments than in others. There is a positive variance in both intercepts (σ^2_{U0}=5.424**) and slopes between schools (σ^2_{u1}=2.093**). However, the variance in intercepts is larger than the variance in slopes. When considering the covariance between the intercept and the slope, there is a small negative relationship suggesting a fanning in of regression lines across schools as *parent embodied cultural capital* increases. This indicates that there is greater variation for children

whose families have lower *parent embodied cultural capital* scores with the schools with above average attainment having flatter than average slopes. This is confirmed by the negative intercept-slope covariance (ρ_{u01}=-2.761**).

Models 21.2 and 21.3 follow a very similar pattern to Model 21.1, with a similar scale of coefficient for the intercept and slope and a negative intercept-slope coefficient. For both *parent objectified cultural capital* and *economic capital* there is a fanning in of lines as found for *parent embodied cultural capital*. This suggests that there are some clear variations in the role of these capitals in young people's attainment across schools, yet, those who have more capital continue to be advantaged irrelevant of the school's mean attainment score.

In all three models, the neighbourhood level becomes significant and continues to emphasise the connection between place and schools. The DIC statistic for this set of models is significantly better for all of these models when compared to Model 20.

7.2.2 Variation between schools – Gender

As discussed previously, the negative coefficient found for *female* students was unexpected. However, when models were undertaken on separate maths and English scores (not presented), it was clear that this was attributable to a lower KS2 mathematics score for girls. There is a multitude of evidence around why girls perform less well in mathematics exams, some linking this to socialisation at home and through the school (e.g. teachers reinforcing gender stereotypes), and others linking it to more structural concerns around curriculum content and mathematics lessons. If attributable to structural curricular issues and teacher bias, the school would show greater variance in attainment, while if the main source was socialisation at home or society more generally then the major source of variation would be at the individual level.

The variance remaining at the school level is higher than that found in the other random slopes models (σ^2_{U0}=8.588**) and a similar slope variance (σ^2_{u1}=2.373**) to that found for

parent embodied cultural capital. The higher the average attainment, the flatter the line between *boys* and *girls*. This suggests that although there is some variation in the relationship to attainment between schools, much of the variation is at the individual level. There is a negative intercept-slope covariance (ρ_{u01}=-4.458) suggesting that for schools where average attainment is higher there is less of a difference in attainment between boys and girls.

7.2.3 Variation between schools – Ethnicity

Similar to the area random slopes ethnicity Model 18, Model 21.5 includes multiple random intercepts, random slopes and covariance. However, the findings at the school level are less conclusive than those at the neighbourhood level. There is less variance across schools in how minority ethnic students perform compared to White students with significant slopes only being found for *Mixed* (σ^2_{u1}=16.216**), *Pakistani/Bangladeshi* (σ^2_{u3}=15.845**) and *Other* (σ^2_{u5}=8.007**) students. Consequently, there is little variance in the negative relationship found between attainment and being *Black* or *Indian* across schools (as negative coefficients are found for both Black and Indian students). This lower attainment across all schools indicates concerning inequalities for some ethnic groups.

Table 7.2: Summary of cross-classified MLMs with school level random slopes on parent cultural capital, economic capital, CM gender and CM ethnicity

	21.1	21.2	21.3	21.4			21.5		
Random variable	Parent embodied CC	Parent objectified CC	Economic capital	Gender	Mixed	Indian	Pakistani/ Bangladeshi	Black	Other
School	5.424**	4.874**	4.87**	8.588**			3.95**		
Intercept-slope covariance	-2.761**	-2.039**	-2.311**	-4.458**	-0.371	-0.011	-0.419	0.013	0.214
Variance of random variable	2.093**	1.347**	1.731**	2.373**	16.216**	0.015	15.845**	0.004	8.007**
Line pattern[67]	Fanning in	Fanning in	Fanning in	Fanning in	No pattern	No pattern	No pattern	No pattern	No pattern
LEA	0.073	0.084	0.062	0.075			0.133		
Output Area	0.596**	0.526**	0.443**	0.484**			0.163		
Child	38.804**	39.939**	39.654**	40.709**			40.79**		

Note: Model 21.5 all covariances are between the constant and the ethnic group, rather than between minority ethnic groups

[67] It is not possible to illustrate the line pattern graphically for each test due to disclosure control checks used by UKDS, this is why line patterns are described in Table 7.2

7.3 Longitudinal analysis

The following models introduce variables from the young people's earlier childhood such as attainment (*standardised school readiness test*), experiences at home (including *family income, home ownership, child-parent relationship score* and *parent education*) and whether they lived in one of the 20% most deprived neighbourhoods in their country[68]. These factors were measured in wave 2 of the Millennium Cohort Study.

The inclusion of capitals measured through proxy variables at this stage of the young people's lives is to identify whether there are differing effects of capital at different points in childhood. This is important as gaps in attainment have been identified early on in young people's lives (see Table 1.1 showing the FSM attainment gap at Key Stage 1) and so including measures from early childhood could help to identify whether there is a critical point when interventions are needed and where they are most effective.

Further, longitudinal analysis is also helpful in that it allows for change in the types and scale of family capital over time meaning that family assets are not perceived as static and never changing. This then allows us to distiguish between families that have had a steady access to capital over time compared to those with less stable access over time. For example, two families with similar economic capital in wave 5 may have had very different paths up to this point; family A have been in a similar position throughout their child's life while family B won the lottery last year. The inclusion of a wave 2 neighbourhood deprivation measure also helps to identify young people's exposure to neighbourhoods, an area needing further

[68] Some of the sample lived in Wales, Scotland or Northern Ireland therefore they were included in the 20% most deprived neighbourhoods in that region, therefore, this variable is not completely equivalent. However removing those who lived elsewhere in the UK would reduce the sample size further.

research (Galster, 2012). Similar to the argument for the inclusion of family capital, wave 2 neighbourhood deprivation allows for a distiction to be made between families who have been exposed to the same type of neighbourhood over the course of their child's life compared to those who have either moved neighbourhood or have seen a change in the composition of their neighbourhood over time.

One of the main reasons to include the wave 2 cognitive ability score (Bracken School Readiness score) is to defend against the argument that those from working class or minority ethnic backgrounds are just 'less able'. By introducing a cognitive test from earlier in their childhood we can see whether the coefficients in the rest of the model change. In all later waves of the MCS the measures of ability gathered by the Centre for Longitudinal Studies (such as the wave 5 cognitive ability score) are affected by young people's school environments. If working class or minority ethnic children really do perform worse because they have lower 'natural ability' then we would expect the capital or ethnicity coefficients to disappear and only see a positive coefficient for the wave 2 school readiness score. Instead, if the coefficients remain for the forms of capital and/or ethnicity, it could indicate that the school does not accept the cultures and skills of working-class and/or minority ethnic children. This again emphasises the relevance of using an ability measure captured prior to starting school.

As there are fewer respondents who completed both waves 2 and 5, the sample size for this model is smaller than that in the earlier parts of this thesis[69]. Therefore, the model including all interactions was undertaken on this smaller sample to allow for better comparison between models. Before continuing to look at the relationship between wave 2

[69] This thesis chose not to use a longitudinal perspective throughout because of this large decrease in sample size. It was thought that due to the large model to be undertaken, the loss of around 3000 observations would risk the model's accuracy. Additionally, at age 3 there are fewer questions gathering capital at home, so capital factors could not be created using the wave 2 data.

variables and wave 5 attainment, this section will first outline the main differences found when the model is undertaken on the smaller sample.

The main reason for the decrease in sample size is due to there being fewer individuals who participated in both waves (2 and 5) and who undertook the Bracken School Readiness Assessment[70]. There is little change in coefficients at the individual level while most area level variables continue to have no significant relationship to attainment when other factors are accounted for. Overall, there is little change to the main findings from Model 20 to 22.

When only wave 2 variables are included with demographic variables (Model 23), we see that most wave 2 variables have a relationship to attainment in the direction expected, net of these wave 5 individual characteristics. *School readiness score* (β=3.137, $p<0.05$) and *parent education* (β=2.439, $p<0.05$) have the largest coefficients of the wave 2 variables. When *school readiness score* is included with the full model on the smaller sample (Model 24), the impact of *school readiness score* decreases slightly, although continues to be an important predictor of attainment (β=2.416, $p<0.05$). The coefficients for the three forms of capital reduce slightly suggesting that family capital has some relationship to wave 2 *school readiness*. As the literature has shown that family SES affects cognitive ability and school readiness at a younger age (Doyle & Timmins, 2007; Dearden et al, 2010), it makes sense that the family capital scores reduce when we add *school readiness*. Interestingly, there is little change to the negative coefficients found for ethnicity in earlier models, meaning that lower performance at wave 5 cannot be attributed to lower school readiness for these ethnic groups.

In Model 25, including all the wave 2 variables, we see that few wave 2 factors continue to be significant when we include wave 5 capitals and neighbourhood characteristics. The only

[70] There could be some underlying reasons behind this (i.e. observations are not missing at random) which has resulted in the changes to the coefficients when the full model is run on this sub-sample.

wave 2 variables that are significant are *school readiness*, *own accommodation* and *managerial/professional* occupation. Additionally, the *economic capital* coefficient decreases majorly between Model 22 and 25. This is likely due to both wave 5 occupation and whether you own your accommodation being included in the *economic capital* factor. This suggests that economic capital is more stable across young people's childhoods, with families in managerial/professional occupations and owning their own accommodation likely still to be in this position in wave 5.

Table 7.3: Cross-classified longitudinal MLM

Model number	**20**	**22**	**23**	**24**	**25**
Fixed Part					
Constant	58.439**	58.606**	54.351**	58.583**	57.022**
Capitals					
Child cultural capital	-0.283**	-0.409**		-0.541**	-0.523**
Child Aspirations	0.554**	0.502**		0.569**	0.544**
Parent aspirations for child	2.856**	2.999**		2.586**	2.594**
Parent cultural capital	1.219**	1.547**		1.228**	1.187**
Area networks	0.16	0.175		0.127	0.108
Shift patterns	-0.246**	-0.299**		-0.232*	-0.219*
Work-life balance	-0.002	0.009		0.04	0.032
Quality of parent child time	-0.381**	-0.637**		-0.617**	-0.626**
Household environment	0.272**	0.484**		0.314**	0.299**
Economic capital	1.168**	0.943**		0.686**	0.401**
Demographic characteristics					
Female	-0.471**	-0.354	-0.466**	-0.642**	-0.636**
Age 11	0.708**	0.808**	1.333**	0.957**	1**
Age 12 (ref age 10)	1.384	0.926	1.193	1.2	1.332
Not always English spoken at home	-0.136	-0.553	0.724	0.031	-0.014
Recorded ASN	-8.012**	-6.979**	-8.074**	-6.2**	-6.156**
Mixed	-1.095**	-0.902	0.452	-0.994	-0.946
Indian	-3.746**	-5.134**	1.185	-4.552**	-4.379**
Pakistani and Bangladeshi	-3.918**	-2.894**	1.049	-2.31*	-2.275*
Black	-2.589**	-3.076**	0.711	-2.387**	-2.388**
Other (ref White)	-1.221	7.831	5.236**	8.686**	8.797*
Area Characteristics					
Unemployed Q1 (low)	0.174	-0.083		-0.222	-0.326
Unemployed Q2	-0.158	-0.366		-0.524	-0.63
Unemployed Q3	-0.018	-0.602		-0.639	-0.741

Unemployed Q4 (high) (ref Q5)	0.15	-0.674	-0.503	-0.607
Elite Q5 (high)	0.955	1.357**	1.115	1.161
Elite Q4	0.583	1.039	1.049*	1.037
Elite Q3	0.66*	0.76	0.592	0.575
Elite Q2 (low) (ref Q1)	0.186	0.496	0.191	0.194
Tenure - owned Q2 (low)	0.075	-0.281	-0.362	-0.466
Tenure - owned Q3	0.541	0.474	0.389	0.251
Tenure - owned Q4	0.567	0.682	0.692	0.497
Tenure – owned Q5 (high) (ref Q1)	0.231	0.083	0.138	-0.055
No car Q4 (high)	-0.097	0.162	0.261	0.235
No car Q3	-0.501	-0.58	-0.349	-0.373
No car Q2	-1.046**	-0.944	-0.744	-0.765
No car Q1 (low) (ref Q5)	-0.936*	-0.99	-0.885	-0.918
16-24 no qual Q2 (low)	-0.036	-0.228	-0.179	-0.175
16-24 no qual Q3	-0.031	0.177	0.062	0.078
16-24 no qual Q4	-0.098	-0.044	0.028	0.047
16-24 no qual Q5 (high) (ref Q1)	-0.034	0.003	0.02	0.095
Degree Q5 (high)	0.529	0.098	0.062	0.061
Degree Q4	0.108	0.463	0.196	0.192
Degree Q3	0.015	0.008	-0.224	-0.23
Degree Q2 (low) (ref Q1)	-0.114	0.003	-0.099	-0.125
% Mixed	0.048	0.063	0.101	0.106
% Black	0.012	0.017	0.021	0.023
% Other	0.046	0.126	0.118	0.11
% Pakistani/Bangladeshi	-0.025	-0.013	-0.026	-0.027
%Indian	0.014	0.047*	0.047	0.044
Interactions				
% White*Other	0.032	-0.049	-0.064	-0.065
% White*Indian	0.039**	0.069**	0.067**	0.065**
% Pakistani/Bangladeshi* Pakistani/Bangladeshi	0.034*	-0.006	0.019	0.02
% Other*Other	-0.149	-0.819*	-0.699	-0.68
Economic capital*work-life balance	-0.258**	-0.205	-0.205*	-0.2
Child cultural capital* Pakistani/Bangladeshi	0.533	1.427**	1.662**	1.662**
Female*Parent cultural capital	-0.334**	-0.67**	-0.576**	-0.573**
Child cultural capital* Parent cultural capital	0.153*	0.185*	0.124	0.119
Economic capital*Elite Q4	0.398	0.141	0.067	0.127
Parent cultural capital*Degree Q4	0.414*	-0.136	-0.129	-0.126
School type				
Other School Type	-0.247	-0.302	-0.282	-0.277
Academy	0.05	0.436	-0.061	-0.094
Special School/Pupil Referral Unit	-16.563**	-14.997**	-15.299**	-15.393**

Wave 2 variables					
School readiness score (wave 2)			3.137**	2.416**	2.391**
Deprived area (wave 2)			-0.243		-0.236
Own accommodation (wave 2)			1.206**		0.857**
Child-parent relationship score (wave 2)			0.033*		0.015
Parent education (wave 2)			2.439**		0.144
Managerial/professional (wave 2)			1.932**		0.614**
Income quintile 5 (wave 2)			0.627**		-0.457
Random Part					
LEA	0.159	0.101	1.116**	0.58**	0.586**
School	4.365**	1.948**	2.417**	1.968**	2.079**
Output area	1.071	1.351	0.081	0.17	0.149
Child	40.931	38.978**	42.854**	35.556**	35.335**
Units					
LEA	144	138	138	138	138
School	2822	1887	1887	1887	1887
Output area	5253	3203	3203	3203	3203
Child (# of observations)	6445	3679	3679	3679	3679
DIC:	42885.97	24245.08	24491.7	23846.65	23839.01
pD:	676.223	329.22	228.848	270.018	282.757

7.4 Discussion

In research relating to both Bourdieu's theory of reproduction and neighbourhood effects the school is seen as a crucial institution. This chapter aimed to investigate the role of schools in young people's attainment, particularly in relation to neighbourhood and family capital. This section will begin by summarising the findings around school type, the only school level variable, and their implications for current policy and future research. It will briefly consider the role of schools in the neighbourhood and finally, will consider the relationship between family capitals and schools.

The most evident finding is that school type has little impact on attainment, once family capital, individual and neighbourhood characteristics are accounted for, other than for special schools and pupil referral units.

The large negative coefficient found for special schools and pupil referral units is over and above the negative coefficient found for children with a reported ASN. This suggests that children with an ASN in mainstream schools are tending to perform better than those in special schools and pupil referral units. This is expected, as children outwith the mainstream system tend to attend special schools and pupil referral units because the mainstream environment may not be suitable for their learning. Therefore, it cannot be said that attending a special school or pupil referral unit reduces attainment; it is more likely that needs are more complex and/or have lower ability levels on entry to such schools.

A second finding that runs through these analysis chapters is that schools are related to both capital and neighbourhood. A connection between the school and neighbourhood was confirmed when the neighbourhood characteristics were added in Model 11, with the school level variance decreasing. Additionally, when the school information is added in Model 20, there was a slight increase in the variance at the neighbourhood level, yet this continues to

be insignificant. This confirms the need for schools to be included in neighbourhood research as highlighted in the literature (Sykes & Musterd, 2011; Kauppinen, 2008). Further it ties the school to the neighbourhood, identifying it as a key neighbourhood institution when researching education.

There is also evidence throughout that there is a connection between the three forms of capital and schools. When the capital factors were added in Models 1.10, 3.1 and 3.2, the variance remaining at the school level, when compared to the null model, reduced. This suggests that there is some clustering of capitals at the school level, particularly economic and cultural capital. The findings of the school level random slopes models also emphasised this relationship further. The relationship between attainment and parent embodied cultural capital, parent objectified cultural capital and economic capital were all shown to vary across schools. This means that while there is clustering of capitals at the school level, the role of capital in attainment varies depending on what school a young person attends. This suggests that these factors are intertwined with family capital related to schools, and in turn, attainment.

The random slopes models provide further insight into the role of schools in reproducing social structures. For all three random slopes models undertaken on capital variables there was less variation in the importance of capital in attainment across schools for those with more capital than those with less (Bernardi & Triventi, 2018). It indicates that, in general, schools are reproducing inequalities as children whose families have more capital are more likely to succeed irrelevant of which school they attend. The slopes in general tended to meet towards the higher end of the capital score suggesting that those from high capital families are doing better. On the other hand, there is more variation in the relationship between capital and attainment for children from lower capital families. This suggests that while schools are reproducing the positions of those at the higher end of the spectrum, some

schools are acting in an equalising manner for those at the lower end of the capital spectrum, as evidenced by some schools having a flatter than average slope. If these schools contain children with lower capital, the flatter slope would suggest that such children can do better than equivalent children in schools where the average capital score is lower. However, the question arises as to whether children with less capital at home do actually attend these schools. It would be helpful to understand the characteristics of these schools with flatter slopes and is an area future research could build on.

The final section (7.3, Longitudinal analysis) wished to utilise the MCS's longitudinal nature. The addition of wave 2 variables reduces the sample greatly, to just 3679 young people. The most important wave 2 variable is found to be the school readiness score, showing that the both ethnicity and capital continue to have strong effects even when accounting for young people's cognitive abilities before starting school. As the scale of the relationship between the family capital factors and attainment reduces slightly with the inclusion of school readiness, this equates with the findings in the literature (Doyle & Timmins, 2007; Dearden et al, 2010), that social class impacts young people's abilities even at the pre-school level. The only other wave 2 variables that are also found to be statistically significant are accommodation ownership and professional/managerial occupation that both are proxy measures of economic capital. Additionally, the impact of economic capital, measured at wave 5, significantly reduces after the introduction of these economic capital variables at wave 2 (accommodation ownership and professional/managerial occupation). Therefore, it could be the case that economic capital is less variant than the other capitals between waves 2 and 5. However, as there are few cultural capital variables present in wave 2 of the MCS, and therefore not in the longitudinal analysis, then conclusions cannot be drawn about the variation in cultural capital across waves.

Chapter 8: Conclusions

This thesis analysed the relationship between the three forms of capital, at home and in the neighbourhood, on young people's Key Stage 2 attainment. To better understand how these capitals affect their attainment it uses Bourdieu's theory of capital (1986), Coleman (1988) and Putnam's (2001) social capital and neighbourhood mechanisms (Galster, 2008) as a guide to measuring social class inequalities between students. Descriptive statistics published by the Department for Education show that children from the poorest families in England are underperforming at all levels in the education system (DfE, 2016a, 2016b, 2017a). These inequalities in educational attainment have consistently been voiced within the academic literature and in the public eye. The worry is that young people are leaving school ill-equipped for wider society, along with concerns around both equal opportunities and social mobility with the consensus being that a child's background should not dictate their outcomes. Governments in power have taken a range of policy and funding steps since 2000, when the young people in this study were born, with some targeting the school (Literacy Hour, Pupil Premium, Academies), the individual and/or the neighbourhood (Excellence in Cities, New Deals for Communities). The overall trend has been an increasing then levelling out of relative funding towards education with a decrease in funding directed to individuals (particularly living in poverty) and neighbourhood (Lupton et al., 2015). This analysis addressed which aspects of the capital (economic, social and cultural) in both the family and neighbourhood context has the largest influence on young people's attainment.

Although government statistics have tended to describe patterns of inequality, the academic literature has analysed the role of different contexts on young people's attainment. Considering the family context, many studies have researched the role of either cultural, social or economic capital on attainment with most finding some effect (see Literature

Review, Chapter 3). However, no studies within the field of education have analysed all three forms of capital together. Taking a multidimensional approach, as in this analysis, means that the role of each capital in relation to the other can be better understood, as well as removing concerns around omitted variable bias.

The second context that this research considers is the neighbourhood. Neighbourhood effects research, looking at education outcomes, has tended to find small neighbourhood effects when accounting for family background (Brännström, 2008; Kauppinen, 2008; Galster and Santiago, 2006). However, these studies have tended to use minimal individual level information and in the UK, due to data limitations, the neighbourhood measures are often indexes (such as the IMD) or single neighbourhood characteristics used to capture deprivation. Instead, this study uses specific, relevant and detailed indicators at the neighbourhood level, selected with guidance from the neighbourhood effects literature and the theory of capital. The key benefit of using both detailed neighbourhood and family characteristics is that we can consider interactions between these two contexts to determine whether the relationship between neighbourhoods and attainment is different for different young people. Additionally, including thorough family level measures also avoids over estimating neighbourhood effects since many of the variables that are correlated with neighbourhood selection are included.

In addition to addressing gaps within the current research, this thesis also adds to the understanding of the three forms of capital and bridges knowledge between education and neighbourhood effects research. Through the use of factor analysis and careful consideration of how the three forms of capital are captured, it is found that both the type of capital and the owner of the capital (parent or child) has an important role in how effective family capital is at improving young people's attainment. Overall, parent aspirations and attitudes towards

education[71] (parent embodied cultural capital) have the largest impact on young people's attainment. Although this research finds that there is a minimal direct role for neighbourhood on all young people's attainment, interactions found that for *some* young people, specific neighbourhood characteristics do have a relationship to attainment. Further analysis indicated that the relationship between various capitals and attainment is more variable across neighbourhoods for those from more capital-deprived families, suggesting that higher capital families may be buffering any negative neighbourhood effects.

This chapter will cover four broad areas: policy implications, methodological implications, limitations and future analysis. In each sub-section, it will consider the implications for each of these areas based on the findings across all three analysis chapters, and therefore will include evidence from the individual, neighbourhood and school analysis. However, before continuing, the four key research questions will be reintroduced to highlight the main findings of this analysis.

8.1 Research questions answered

To what extent are family economic, social and cultural capitals associated with young people's attainment?

It is clear that the economic, social and cultural capitals available to young people at home do have an overall independent positive impact on young people's attainment. However, some capitals and specific aspects of these capitals do not fit this pattern. The strongest relationship was found for *parent embodied cultural capital*, closely followed by *parent objectified cultural capital* (qualifications and cultural objects) and *economic capital*. Many studies have found that cultural capital has a positive relationship to attainment (Sullivan,

[71] Parent wants child to stay on at school, need a qualification to get a job worth having, think child might attend university.

2001; De Graaf et al, 2000; Jæger, 2011; Dumais, 2002, 2006), although none of these studies included all three capitals, and this study can confirm that this continues to be the case even when accounting for the other forms of capital. The relationship found between social capital and attainment is much smaller than that found for economic and cultural capital. Parent capitals are also found to have a larger effect when accounting for other capitals and demographic characteristics than child capitals.

What is the interplay between different forms of capital at home?

This analysis found that economic capital does not enhance social or cultural capital. Each capital has an independent effect on attainment and interaction terms did not find that the effects of cultural or social capital were different for those with and without economic capital. Only *work-life balance* was found to have an additional positive effect on attainment when interacted with economic capital, although there is no significant effect without economic capital. This finding is particularly important in the case of social capital, as Bourdieu (1986) believed that social capital primarily benefitted the economically wealthy. Therefore, contrary to Bourdieu's belief, the effects of social and cultural capital are the same for children from low and high economic capital families. Instead it supports Coleman's understanding of social capital as educationally beneficial to young people in deprived areas (Field, 2003), although the effects are minimal.

It also tested for relationships between the different aspects of cultural capital, finding that although *child objectified cultural capital* has little impact on attainment, when there is both above average parent and child objectified cultural capital, there is a small positive effect of *children's objectified cultural capital* on attainment. This could reflect Lareau's (2002) distinction between the style of parenting used in middle- and working-class families, where middle class families use a style of child rearing described as 'concerted cultivation' where

they were seen to make a deliberate and sustained effort to stimulate children's development and to cultivate their cognitive and social skills.

To what extent are neighbourhood economic, social and cultural capital associated with young people's attainment?

The direct relationship between neighbourhood capital and attainment is small reflecting much of the neighbourhood effects literature that includes detailed individual level data (Lupton, 2003). However, to some extent, neighbourhood cultural capital (degree-educated adults) and economic capital (managerial and professional adults) in a neighbourhood has a positive effect on young people's attainment. However, the findings related to the fourth research question (below) suggest that neighbourhood does have an effect, yet it is dependent on the individual's own characteristics.

What is the interplay between neighbourhood and individual capitals and characteristics?

Galster (2012; Galster et al, 2010) highlighted the need for further research that considers the differences in neighbourhood effects for individuals with different characteristics. This study succeeded in filling this gap by considering the interplay between capitals at home and in the neighbourhood and it was found that, for both economic and cultural capital, those with more capital benefitted further from the capital in the neighbourhood, while those with less capital at home were further disadvantaged. Therefore, a relative deprivation effect was found for both economic and cultural capital. When considering interplay between the young person's ethnicity and the ethnic composition of the neighbourhood, it was found that bridging and bonding had a significant positive effect for some ethnic groups and a negative effect for others.

8.2 Policy Implications and Future Research

Current policy is focused on the school as a mechanism by which social class inequalities can be overcome. The UK governments have emphasised the need for a more equal system, where a child's socio-economic background should not determine their attainment. Simultaneously, policy addressing neighbourhood poverty has had funding withdrawn, while state welfare has dramatically decreased and working conditions worsened, creating less economic and social stability for families (Ball, 2017; Lupton et al., 2015). This would suggest that, due to the widening inequalities in the society outside of the school, if schools are expected to level the playing field in terms of attainment, they must effectively support the improved attainment of a growing number of deprived children. This section will discuss three key policy areas: economic and family; schools and education; and neighbourhoods. As well as considering the current Conservative government's policies in light of this study's findings, it will also discuss policies that were in place during the child's life course (as discussed in Sections 2.1 to 2.3 on New Labour, Coalition and Conservative policies).

8.2.1 Economic and Family Policy

In accordance with much of the research, it was found that the individual level variables explained the largest amount of variance in KS2 attainment, with family capital and ethnicity playing a major role. This thesis used Bourdieu's (1986) three forms of capital as a theoretical lens for capturing family social class. By using this lens it is possible to investigate a wider range of ways in which young people's backgrounds can impact on their attainment and, therefore, a wider range of ways by which the government can intervene effectively through policy and funding priorities. The following will outline different policies associated with both cultural and economic capital at the individual level, including both the child and family, as these were found to have the largest impact on attainment.

Within the cultural capital literature, there has been wide debate over what aspects of cultural capital have the largest impact on young people's attainment (Sullivan, 2001; Lareau & Weininger, 2003). The starting point for this discussion is the role of *child objectified cultural capital* and programmes created to distribute objectified cultural capital to young people, such as book or music schemes. Within the literature mixed effects have been found for objectified cultural capital (DiMaggio, 1982; Dumais, 2002, 2006; Tramonte & Willms, 2010). However, this analysis suggests that these programmes are unlikely to be the most effective way of improving young people's attainment through the redistribution of capital, as *child objectified cultural capital*[72] is found to have a small negative coefficient once controlling for other parent and child cultural capital. Instead, other capitals are found to be more influential on children's attainment and suggest better investments could be made by increasing family capital.

In comparison to child objectified cultural capital, embodied cultural capital (factors primarily constructed with measures of educational attitudes and aspirations) is a strong predictor of young people's attainment. Both parent and child embodied cultural capital were found to have an independent positive effect on young people's attainment, even though these factors are strongly related to each other (Table 5.8 – correlations between capitals, Section 5.2.4 – Relationships between capitals). Much of the current literature has focused on traditional, highbrow measures of cultural capital, and have therefore underestimated the role of embodied cultural capital (Lamont & Lareau, 1988). Additionally, highbrow measures could have been overestimated due to correlations between embodied and objectified cultural capital. Understanding how parent and child embodied cultural capital can be increased is crucial to understanding how policy can support young people's attainment. Parent and child educational attitudes could be contributing to attainment both

[72] Primarily comprised of reading habits and creative activities.

directly and indirectly. For example, children with more positive embodied cultural capital are likely to put more effort into schoolwork while parents may make more positive educational decisions on behalf of their child. The limited analysis of these mechanisms undertaken here, considering correlations between capital factors, shows a strong link between child objective cultural capital and both parent and child embodied cultural capital. Future work, possibly utilising structural equation models, should focus on these pathways to elucidate the ways by which parent and child educational attitudes and aspirations can improve attainment.

Considering the economic and cultural capital available to young people, it is clear that parental capital has a larger effect on young people's attainment than that of the child. Of the capitals tested parent embodied cultural capital, parent objectified cultural capital[73] and economic capital have the largest effects on attainment. This indicates that improving parent owned capital, the resources available to parents to support their children, is likely to have a larger effect on child attainment than directing capital outwith the school to young people. Parents' attitudes and behaviours seem to play an important role in the educational effectiveness of young people's capital. As parent objectified cultural capital has a large coefficient, it would suggest that investments in parent education and reading habits (both owning/accessing books and reading frequency) are likely to be more effective than those directed at improving child objectified cultural capital, although evidently this is a much harder task as it requires parent involvement. Additionally, when children have both their own and parent objectified cultural capital, it was found that child objectified cultural capital had a positive overall effect on attainment. This finding reinforces the importance of parent cultural capital and would suggest that e.g. investing in adult education could be a helpful way of improving both adult (MacLeod & Tett, 2019) and child outcomes (Carpentieri, 2012).

[73] Primarily measured through reading habits, book ownership and qualifications

The literature suggests that adult education, such as in family learning environments, does have a positive long-term effect on both parents and children (ibid; MacLeod & Tett, 2019). Future research may wish to test what levels of education (institutionalised cultural capital) are important in activating child objectified cultural capital, is all adult education helpful or just education at higher levels? Additionally, this factor also includes measures of parent objectified cultural capital. How these affect child cultural capital consumption is important and needs to be researched.

Economic capital was also found to have a large impact on attainment. In this study the economic capital variable measures the capital of the adults in the family. Again, this suggests that one major way that attainment can be raised is through improving the parent's access to capital, in this case economic capital. As discussed in the context chapter (Chapter 2), the Coalition and Conservative governments both reduced the support available through the welfare system in comparison to Labour (Hills et al., 2015), and witnessed increasing child poverty rates (Hood & Waters, 2017; JRF, 2018a). At the same time, there has been no increase in other economic resources with stocks of council housing and minimum wages not commensurate with the public need. This research found that a child at the maximum possible value of the economic capital factor score gained around 7 additional points to their total KS2 score than those at the lower end. As schools at the time of this study were clearly not able to balance out the inequalities found in family economic capital, it is likely that as the attainment gap between rich and poor has continued to widen and as the numbers of families living in poverty has increased, they will be further challenged to balance out these external inequalities. Future work should investigate whether there is growing strength in the relationship between attainment and economic capital as economic inequalities in the UK widen.

Although it has been argued that investing in parent capital and child embodied cultural capital is more effective than focusing on child objectified cultural capital, that is not to say that providing young people with cultural resources, particularly verbal and literary resources, is not at all helpful at improving attainment. When gross effects were modelled (Model 1.1), child objectified cultural capital does have a significant positive effect on attainment. Yet, the decrease in the coefficient when other capitals are included suggests that children's objectified cultural capital, and its effectiveness, is mediated by the parent. This supports Lareau's (2002) concept of 'concerted cultivation', where middle class parents subtly direct their children towards educationally beneficial activities. This is further bolstered by the finding that an interaction between child and parent objectified cultural capital is positive, meaning that there is an additional positive effect if there is both parent and child objectified cultural capital.

This analysis is not able to test the economic resources that may be directed towards the young people, for example, via the school. The major education policy introduced by the Coalition government is the Pupil Premium. The effect of this cannot be evaluated as there is not enough information on school funds and the use of funding by schools. However, this work does use the school level in analysis. When we look at the school, we see that it continues to hold a large proportion of the remaining unexplained variance; this would suggest that positive alterations could be made at the school level to improve attainment. However, these investments in the Pupil Premium need to target young people from capital-deprived backgrounds as the school level random slopes models show that those from high capital families are doing well irrelevant of the school. As discussed in the literature review, a review of the Pupil Premium highlighted that this was not always the case (Carpenter et al., 2013).

It is clear that parent capital is a major factor in young people's attainment at KS2, more so than child capital alone. This would confirm that, as parent resources affect child attainment, schools are unlikely to be able to counteract social inequalities and to act in a fully equalising manner.

8.2.2 Neighbourhood and Area Policy

Reflecting much of the literature neighbourhood was found to have a limited direct relationship to attainment, whether considering the variance at the neighbourhood level of the MLM or the coefficients found for neighbourhood characteristics. This also mirrors the policy evaluations of New Labour's Education Action Zones, Excellence in Cities and New Deals for Communities, all of which found limited effects for education (McKnight et al., 2005; Machin & McNally, 2008; Lupton & Power, 2005). However, there are some important findings regarding the neighbourhood that are relevant to policy.

Although the current government has few policies related to social capital building at the area level, New Labour, the Coalition government and David Cameron's Conservative government have all utilised social capital theory when considering neighbourhood community-building policies (see sections 2.1 to 2.3 on New Labour, Coalition and Conservative policies). Much of this policymaking was built on the work of Putnam (2001), yet few policymakers discuss the concepts of bridging and bonding social capital. This research highlights that both bridging and bonding social capital can have a positive *or* negative effect on young people's attainment according to their ethnic background, conflicting with Putnam's general theory that bridging social capital is positive while bonding social capital is related to negative outcomes and exclusion (Putnam, 2001). These findings also suggest that improving attainment through social capital does not necessarily take the same form across communities and so makes national level policymaking more difficult. Additionally, the bridging and bonding networks found in this analysis across different ethnic

groups are unlikely to be the product of national policies to date as ethnicity was not a key target for social capital policy by New Labour, Coalition or Conservative Governments. Instead, governments have tended to focus on the role of social capital in improving outcomes for those living in socio-economically deprived areas. Combined, this suggests that minority ethnic communities are using social networks to make up for other disadvantage as found in some of the qualitative literature (Crozier & Davies, 2006, 2007). Further research is needed to understand how and why some minority ethnic groups are using their bridging and bonding social networks to improve attainment in advance of introducing effective policies to either target support for network building or to reduce the inequalities that require minority ethnic groups to use social networks in the first place.

This analysis also tested for the presence of two neighbourhood mechanisms, relative deprivation and collective socialisation, by considering the capitals available to children at home and in the area. These interactions were between economic capital interacted with the fourth quintile for the proportion of residents in elite professions and parent objectified cultural capital interacted with the fourth quintile for the proportion of residents with a degree. In both cases, interactions were only found to have an impact on attainment in relatively high capital areas (quintile 4 elite and degrees). Crucially, these area capitals are shown to have an extra benefit for those from high capital families and a negative effect for those from low capital families. This points to relative deprivation acting at the neighbourhood level through both economic and cultural factors and suggests that dissimilarly educated and employed residents are not interacting. Atkinson and Kintrea's (2000) research into mixed neighbourhoods in Scotland found that the social worlds of those in social housing and private housing within the mixed estates rarely collided while evidence from the Yonkers housing mobility programme suggested that those who were moved to social housing in a predominantly private estate did not successfully integrate into the area

(de Souza Briggs, 1998). Policy must consider ways in which integration, although not necessarily assimilation, between neighbours with different socio-economic backgrounds can be encouraged so that everyone can benefit from the capital available in the neighbourhood.

These between level interactions make it clear that certain neighbourhood characteristics matter for some young people and would support Galster's (2012; Galster et al., 2010) call for more research analysing between level interactions to identify differing neighbourhood effects across residents. For minority ethnic groups the ethnic mix of the neighbourhood can have a positive or negative impact on attainment dependent on ethnicity. For families with high economic capital there is further advantage when living in an area with a relatively high proportion of Elite residents, while for families with high cultural capital there is further advantage when living in an area with a relatively high proportion of degree educated residents. Additionally, area level random slopes found that the importance of family capital to attainment varied across neighbourhoods, but with more variation for those from capital-deprived families, meaning that neighbourhoods are more important for families with less capital. In these random slopes models specific neighbourhood characteristics (as used in analysis of the neighbourhood characteristics and interactions) are not looked at but instead the neighbourhood is captured through the identification of different neighbourhood clusters in the data. Again, the suggestion is that neighbourhoods *can* be important.

In all of these cases, where neighbourhood is a contributing factor to young people's attainment, the family level characteristics are involved either through an interaction with a neighbourhood characteristic or by the fact that the effectiveness of the individual characteristic at improving attainment varies across neighbourhoods. Considering this finding and recognising that neighbourhoods are both an environment and a group of individuals with their own characteristics and capital, it becomes obvious that family capital

has a crucial role in how neighbourhoods affect individuals. As it is also known from this analysis that family capital is an important predictor of attainment, the targeting of resources to the individual would seem a sensible approach to reducing inequalities in attainment since it affects both the family and neighbourhood levels by altering both family capital and neighbourhood composition. If the government was to direct capital to the individual the positive impact on children whose families receive this could be seen. Further, there could also be an additional impact of improving the neighbourhood level distribution of capital. The Coalition government's Localism Act, where trickle down effects of area level economic policy are hoped to affect individuals in the surrounding area, targets resources at the meso level while New Labour's place-based policies tended to focus on improving local services and facilities that are accessible to everyone. When considering these policies to improve neighbourhoods and communities, it is seen that funding tends to be directed at the neighbourhood as distinct from that directed to the individual. Therefore, the main finding relevant to neighbourhood policy is that although neighbourhoods do matter to some people, policy directed towards deprived individuals is likely to have a more positive effect than focusing solely on the area, with area policies historically, such as the Localism Act, neglecting the underlying inequalities between residents.

8.2.3 School and Education Policy

The most evident finding for this thesis is that the education system does, to some extent, reproduce class structures captured through the measures of family economic, social and cultural capital. A significant relationship was found between access to economic and cultural capital, and KS2 attainment when other family, school and neighbourhood factors were accounted for. This shows that children from more privileged backgrounds are advantaged within the school system. Furthering this, school level random slopes models on family capital variables suggest that schools can have an equalising effect, since there is more

variation in the relationship between capital at home and attainment for those with lower family capital. However, this also implies that young people from higher capital families are consistently achieving well across schools, reinforcing social positions. Considering all of this evidence, it is clear that schools are an important focus for policy if wishing to reduce social-class inequalities in attainment and improve social mobility.

The first point in relation to the role of schools in education policy is school type. This analysis suggests that in 2011, at the primary level, the type of school is not important in determining young people's attainment. In the school year 2016-2017, the UK government spent £81 million converting schools (secondary and primary) to support the formation of academies in England and Wales (Public Accounts Committee, 2018). This analysis gives little in support of their effectiveness at improving attainment at the primary level when accounting for family capital, individual demographics and neighbourhood. However, since the data was collected in 2011, it is important to note that this research could not account for the current distribution of academies due to the rapid roll out of academies in recent years. This has resulted in an increase in the number of academies at the primary level which could mean that, with a larger sample size, there is the possibility that future analysis would produce different results. Additionally, it may be the case that there is a significant effect found for secondary school that convert to academies; this should be addressed in future research when data on secondary school attainment becomes available.

The effects of school composition have been widely debated, however, the literature has highlighted that the segregation of schools by socio-economic status as well as ethnicity is occurring in England (Noden, 2000; Johnston et al., 2006). Although this study did not have data on school composition, school level random slopes models were used to look at the relationship between attainment and family capital and ethnicity across schools. Analysis of family capital suggests that in schools with higher average capital (parent objectified cultural

capital, parent embodied cultural capital and economic capital) there is a less strong relationship between capital and attainment, meaning that these schools are more equalising. Yet the children from high capital families continue to do well. This would suggest that although deprived children in these more equal schools are doing better than their counterparts in other schools, those from less capital-deprived backgrounds continue to be additionally advantaged. It is also important to note that it is unclear in this analysis how many children from lower capital families actually attend these higher average capital schools. Future analysis should aim for more clustering at the school level and gain some information around the composition of the school. This would produce better slope estimates, in turn allowing insight into whether these more socially mixed schools produce more equal attainment thus reducing the role of family capital in attainment.

Descriptive analysis (Section 5.2.4, Relationships between capital factors) shows that capitals are distributed differently across ethnicities, with higher levels of child (embodied and objectified) and adult (embodied) cultural capital and lower levels of economic capital. Note that most ethnic groups do not have higher parent objectified cultural capital than White individuals and this is likely due to parent education contributing to this factor. It could be the case that these higher cultural capital levels partly contribute to the negative (fixed) effect of being from a minority ethnic background. Much of the qualitative research on race and cultural capital has founds that the cultural capital of ethnic minorities does not fit with the cultural capital required by the school (Lareau & Horvat, 1999; Khalifa, 2010), the story behind this being that minority ethnic cultures, and therefore minority ethnic cultural capital, are not equally valued by the school when compared to the cultural capital of White students. This could be due to the knowledge base of ethnic minorities not fitting with the curriculum content (Nash, 2002) or their behaviour, in its broadest sense, not meeting the behaviour expected by the school (Khalifa, 2010; Lareau & Horvat, 1999; Gillborn, 1992). School level

random slopes models also found that ethnicity had differing effects across schools for *some* ethnic groups. Variation in the relationship between ethnicity and attainment was found for Pakistani and Bangladeshi, Mixed and Other ethnicity young people compared to the majority reference group, White ethnicity. However, there is no significant variation for Black or Indian students across schools yet they continue to have a negative coefficient for all students of Black and Indian ethnicity. As discussed in Chapter 7, analysis was undertaken using a sub-sample of the MCS that had responded to waves 2 and 5. This analysis showed that even when we control for the wave 2 Bracken School Readiness Score (an individual concept knowledge test), being Black continues to have a significant negative relationship to attainment. This highlights that Black young people are, in general, underperforming across all schools and could suggest that these ethnic groups are being let down by the education system. Even though this outcome is likely unintentional, this is concerning and suggests that those in policy and working within the education system need to consider why some ethnic minorities are consistently underperforming and address their role within this. As discussed in the analysis, this does not mean that children from minority ethnic groups are necessarily underperforming when we do not account for family background. Instead it suggests that minority ethnic groups, who out with the school utilise more embodied and child objectified cultural capital than their White peers, gain less returns from their family capital.

The findings from the random slopes models (Section 7.2, Variations in effects across schools) suggest that the polarisation of family capital between schools is detrimental to young people from low capital families. It was found that in schools with lower mean capital, capital is more important for attainment (as steeper slopes are found) when there is clearly less of it available to the students at home (due to a lower mean capital in the school)[74]. For

[74] As there is a significant intercept slope correlation then the slope of the school regression line becomes flatter the higher the average capital of the school. This association means that in schools with higher average capital the less strong the relationship between capital and attainment is.

these low-capital students being in a low capital school means that their lack of capital actually becomes more important as the relationship between family capital and attainment is stronger, suggesting that socio-economic inequalities are likely to widen. This is linked to policy around parental choice and would imply that if this is creating an unequal distribution of young people from low capital homes between schools, as is suggested in the literature, then further disadvantage is being created rather than more opportunity. As there is no significant intercept-slope correlations for ethnicity, it suggests that the distribution of ethnicity in the school is not primarily the source of the variation in this relationship.

In relation to the distribution of students across schools is the important topic of grammar schools. As mentioned in Chapter 2, the current Conservative government has mentioned the possible expansion of grammar schools in the secondary system. While this analysis is undertaken on primary school children, it is this KS2 level that is likely to impact on young people's entry into grammar schools as attainment at this level is used as an entry criterion. As attainment is closely linked to both family capital and ethnicity, an increase in the number of grammar schools is likely to further entrench socio-economic inequalities particularly if the connection between primary school KS2 attainment and both capital and ethnicity is not broken. If this is not tackled and resolved then children meeting the access requirements for grammar schools are increasingly more likely to be from advantaged, White backgrounds.

Finally, although the reporting of equality statistics is more related to methodology than policy, it is important that policy decision-making moves away from being primarily informed by descriptive statistics. The case of ethnicity and attainment is a perfect example of this, with descriptive statistics limiting our understanding of minority ethnic attainment in two ways:

1. Often carried out on too simplistic a division of ethnic groups (i.e. White/Minority ethnic)

2. Structural inequalities are missed as minority ethnic young people are not entering school with the same family and neighbourhood backgrounds as their White peers.

The grouping of observations selected for publication often conflates the underlying patterns found for different ethnic groups. This means that resources cannot be targeted correctly and the underlying inequalities for some ethnic groups are missed. For example, Pakistani and Bangladeshi young people have consistently had lower attainment rates (DfE, 2017a), yet, due to reporting 'Asian' attainment, there is not necessarily accountability for this. To resolve this second issue inferential statistics, rather than descriptive statistics, can be used to look for underlying patterns when we hold other factors constant. As can be seen in this analysis, when we hold family capital, age, language, gender and neighbourhood constant (so only vary ethnicity) minority ethnic young people are clearly disadvantaged when compared to equivalent White young people. This cannot be seen with the use of descriptive statistics which do not take into account variation in the background characteristics of pupils from different ethnic groups.

While it is clear that the school is a key institution in young people's attainment, it is important to emphasise that while schools should aim to not reproduce social-class inequalities, they cannot be expected to reverse entrenched social inequalities found in wider society. It is also clear from the analysis in Section 5.2.4 (Relationships between capital factors) that capitals are not distributed equally across individuals.

This thesis covers a vast array of policy areas and therefore, it would not be possible to look in depth at these policies, however, it is clear that family capital is crucial at all levels of analysis. This implies that policies targeting the growing inequalities outside of the school are likely to have an impact across different levels of society, and therefore be a more effective investment. This does not mean that there is no need for investments into the education

system, local facilities and communities: it is that these investments are likely to struggle to compensate for these growing inequalities between individuals. It is also likely that policies that target family capital will improve both social mobility and increase the number of young people reaching expected levels. One concern, although not the focus of this thesis, is the striking finding of the negative effects of being from a minority ethnic background once other characteristics are accounted for. Education policy and curriculum development need to consider why this is happening and what can be done to improve this.

8.3 Methodological Implications and Future Research

Although the focus of this thesis was not methodological, there are some interesting methodological findings. This section will begin by discussing the use of broad measures for capturing the three forms of capital and how this can be supported in quantitative analysis with factor analysis techniques. While the methods chapter makes it clear that the use of MLMs is preferred, this section will consider what has been learned through the use of MLMs methodologically. Overall, the methods used in this analysis have complemented the problem at hand and made improvements on the techniques used in other research.

The key methodological contribution of this thesis is the use of factor analysis to create latent variables that capture cultural, social and economic capital. Previous research has been limited in two ways, it has not included all three forms of capital and it has used proxy variables. Factor analysis allows us to reduce the data, from over 40 variables to 10. This allowed a multidimensional approach to be taken, including all three forms of capital. It also meant that the three forms of capital could be measured in a much broader way than previously and avoid the use of proxy variables. Therefore, the use of factor analysis has meant that two concerns with the methodology of the previous literature on economic, social and cultural capital could be overcome.

The second aspect by which this research contributes to methods is the use of random slopes models on family capitals at varying levels of an MLM. It becomes clear that capital at home has varying effects across neighbourhoods and schools and that this should be investigated further. Future work should aim for greater clustering in the data so that more accurate estimates of the variance in effect size of family capital across areas and schools can be made. At the place level, this may mean using a larger neighbourhood scale, which may be appropriate for older, secondary school age, young people. Using a sample of secondary

school children may also provide more clustering at the school level, since primary schools tend to be smaller than secondary schools.

Finally, reflecting much of the empirical literature, the use of MLMs as discussed in the neighbourhood chapter found that schools need to be included in neighbourhood effects research where the dependent variable is related to education (Sykes & Musterd, 2011; Kauppinen, 2008). This is both a methodological and theoretical finding, in that schools must be considered both connected to the neighbourhood (due to catchments and the use of distance criteria) as well as functioning as a neighbourhood institution. This analysis could be improved by using better school characteristic variables and including school demographics such as ethnic composition, average attainment, ASN and FSM provision. Such analysis was not carried out, as data was not available at the time to link school characteristics with the school attended by the CMs. Having school characteristics would also increase knowledge on whether the schools that are more equal (with a higher average capital score) do actually contain children from deprived families.

Comparing models in the place focused analysis chapter (Chapter 6) it is clear that neighbourhood effects are not necessarily fixed effects, with different neighbourhood characteristics having different effects for different residents. Galster and colleague's review of the neighbourhood effects literature (2010) suggested that neighbourhood analysis needs to include more complex analysis of the relationships between neighbourhoods and individual's outcomes, particularly between level interactions, both of which were undertaken in this work. Between level interactions are important for determining the presence of neighbourhood mechanisms and can be undertaken in most multi-level modelling strategies. Therefore, the between-level interactions in the MLM framework should be used whenever possible. This analysis also found multiple significant between-level interactions. The effects of neighbourhoods can be further considered in more depth through

the use of random slopes models on the neighbourhood level. These also showed that the effects of the individual's characteristics varied depending on the neighbourhood which could be seen as a way by which neighbourhoods enhance or diminish the role of individual characteristics.

8.4 Limitations

There are a number of data limitations that have affected the conclusions that could be drawn from this research, by far the most relevant being the lack of data at the school level. The only descriptive variable available at this level was the school type, with even that measure being limited to just four categories. Future work should aim to increase the information available at this level to include school composition, funding and teaching. The school composition is particularly important in this context, as it allows identification of the social mix of the school, comparing this to both the neighbourhood composition and the Child of the Millennium's own characteristics. This project was granted permission to link school characteristics (from the National Pupil Database) to the MCS. However, due to changes in data sharing legislation (the introduction of the Data Protection Act 2018) this process was lengthened meaning that the data was not made available at an appropriate time to carry out analysis.

An area that could not be improved on with the use of the current main dataset (the Millennium Cohort Study wave 5) is the measures of social capital. It has been suggested that factor analysis could improve measures of social capital as it allows the researcher to consider whether the broad array of variables used to measure social capital are related (Fine, 2018). Although this analysis did this, the relationships between the social capital measures included in the factor analysis, and between social capital factors outputted from this, are both found to be weak. Future work on social capital needs to move away from the measures used by Coleman and Putnam, which capture environments believed to be conducive to social capital to measures of the scale and quality of networks. This requirement goes beyond the measures researchers currently select and means that efforts need to be made in developing questions that are cost and time effective for use in social surveys.

Another possibility is for the Lin Position Generator method (Lin & Dumin, 1986; as discussed in Section 3.2.6, Operationalisations of capital) to be utilised in more research.

A third weakness, linking both data and methods, is the minimal amount of clustering at the school and neighbourhood levels within the MCS, i.e. many neighbourhoods include just one CM. While analysis was carried out using an MLM, and only significant VPC and random slopes were reported, more clustering at each level of the MLM would have allowed stronger conclusions to be drawn about these levels. Future analysis may wish to utilise larger spatial scales and schools with larger intakes (for example secondary rather than primary schools).

Neighbourhood selection bias remains the main methodological problem for this research. The sample size means that it is difficult to use proxy methods (see Section 6.6, Identifying neighbourhood effects through proxy methods) as sub-populations are too small to find meaningful or reliable results. Additionally, the neighbourhood characteristics were created using the 2011 census which means that it was gathered at the same time as the KS2 attainment data and so no other proxy methods using lagged effects could be utilised.

8.5 Directions for Future Research - Summary

This section wishes to pull together the main areas for future research that are mentioned in this final chapter. These draw upon the findings of this PhD research as well as aiming to fill gaps and remedy weaknesses.

Of the three levels utilised in this research, data at the school level is the weakest, with only one independent, fixed effects variable. Future research should try to combine more information at the school level so that all three levels contain rich data. One method for achieving this would be to link a summary of the National Pupil Database (NPD) by school. This was not possible for this analysis as the MCS contains only anonymised school IDs and required additional permissions to access the non-anonymised IDs. The key variables from the NPD that could be used to describe the school composition are the proportion of minority ethic, ASN and FSM pupils, and the school's average attainment. As mentioned previously access to this data has been permitted, however, due to time constraints, access and analysis have not been carried out but would be a logical next step.

Future research focusing on the secondary school would be helpful in many ways. The exams undertaken at age 16 are, in general, more important in determining young people's destinations than Key Stage tests. Focusing on the secondary level would allow more conclusions to be drawn about the role of the education system in reproducing social class inequalities throughout young people's life course. Additionally, much of the national education policy is focused on secondary schools which give greater variation in school types and sizes. Finally, using secondary school data is likely to improve the possibility of clustering of pupils at the school level, providing more robust analysis of school level effects.

The neighbourhood context could also be explored further by considering both the variance in neighbourhood effects for residents with different characteristics, extending these beyond the capitals investigated in this study, as well as measuring individual's

exposure to neighbourhoods over time (Galster, 2012). It is conceivable that characteristics beyond family capital, such as gender and ethnicity, may impact the effects of neighbourhood on young people's attainment. Including exposure to neighbourhoods would add a better understanding about the long-term effects of living in deprived areas on attainment. It would also mean that it would be possible to identify whether there are crucial points within childhood when neighbourhoods come to effect attainment.

There also seems to be a lack of literature looking at ethnicity and family capital. The significant findings of this study relating to ethnicity suggest that it is still a major predictor of young people's attainment yet much of the policy has missed this due to the use of descriptive statistics. More research needs to be undertaken to deconstruct why ethnic minority children are doing less well at school when accounting for the resources input by their families. In the case of Black children, there should be additional investigations given that when considering descriptive statistics they are consistently scoring lower than most of their peers, as well as having a negative relationship to attainment when accounting for other family and neighbourhood factors and school readiness at age 4. The most concerning aspect here is that this effect does not vary across neighbourhoods or schools.

Finally, one methodology that future research could utilise is Structural Equation Models (SEM). SEM allows for pathways to be created, analysing the links that have been theorised, in this case, between two independent variables in a quantitative analysis. Resulting from this research there are a few key questions that could be answered by using path analysis e.g. how does parent embodied and objectified cultural capital affect child cultural capital? How does neighbourhood influence child and parent behaviours and attitudes? The SEM framework also allows for the creation of latent variables and MLMs, meaning that the key aspects of the methodology used throughout can continue to be utilised. It was not feasible to undertake SEM in the course of this PhD due to time constraints.

This thesis contributes to the literature by adding to the understanding of the role of social class in affecting young people's attainment. It utilises Bourdieu's Theory of Capital and neighbourhood effects theories and helps to identify the different ways that social class inequalities are reproduced by considering the importance of different contextual factors on young people's attainment.

Within the education literature many studies have investigated the role of either economic, social or cultural capital on various educational outcomes, yet no studies have investigated the role of all three capitals to identify their relative importance or whether there exists an additional effect when owning multiple capitals. Improving upon previous quantitative studies this work used factor analysis as a tool to create measures for each capital resulting in more well-rounded measures of capital, avoiding the use of proxy measures and allowing for all three capitals to be included in the analysis. It can be concluded that cultural capital continues to be the strongest predictor of young people's attainment, even when accounting for economic and social capital. Further, there was found to be no additional impact of economic capital on cultural or social capital, yet it was found that parent cultural capital did impact the effectiveness of child cultural capital in improving young people's attainment.

A further advantage to this work was the inclusion of multiple contexts, the family, neighbourhood and school. By linking the Millennium Cohort Study with two administrative datasets it was possible to capture these levels in a more detailed manner than previous studies. Although this thesis was not able to overcome the problem of neighbourhood selection bias, it has shown how between level interactions can be utilised to determine neighbourhood effects for different individuals, an area that was lacking in the previous research with most studies assuming the same effects across residents. It also uses between level interactions to investigate the role of bridging and bonding social capital, finding that

benefits can be found from both bridging and bonding social capital for different minority ethnic groups.

Future research needs to expand on the role of schools within young people's contexts as well as aiming for more clustering at the neighbourhood and schools levels to produce more robust results.

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Appendix A: Gross effects – neighbourhood level

Table A.1: Gross effects - cross-classified MLMs of neighbourhood characteristics

Fixed Part	Degree	No car	16-25 No qualifications	Unemployed	Owned	Elite	Ethnicity
Output Area Quintiles (Q1-Q5)							
Degree Q2	1.54**						
Degree Q3	2.854**						
Degree Q4	4.138**						
Degree Q5 (ref Q1)	6.158**						
No Car Q4		1.154**					
No Car Q3		2.344**					
No Car Q2		3.126**					
No Car Q1 (ref Q5)		4.426**					
No quals Q2			-0.227				
No quals Q3			-0.531				
No quals Q4			-1.457**				
No quals Q5 (ref Q1)			-2.673**				
Unemployed Q1				4.525**			
Unemployed Q2				3.046**			
Unemployed Q3				2.568**			
Unemployed Q4 (ref Q5)				1.583**			
Tenure Q2					0.917**		
Tenure Q3					2.903**		

Tenure Q4					3.433**		
Tenure Q5 (ref Q1)					3.846**		
Elite Q2						1.505**	
Elite Q3						3.031**	
Elite Q4						4.161**	
Elite Q5 (ref Q1)						6.232**	
Mixed ethnicity (%)							-0.058
Black (%)							-0.045**
Other ethnicity (%)							0.018
Pakistani/Bangladeshi(%)							-0.046**
Indian (%) (ref White)							0.033*
Random Part							
Level: LEAid	0.277	1.428**	0.925**	1.335**	1.491**	0.442	1.222**
Level: schlid	7.567**	9.453**	10.277**	11.455**	9.246**	7.306**	11.433**
Level: OAid	2.166	2.353*	2.697*	2.638*	2.281	2.04	1.44
Level: numCMID	63.947**	63.449**	63.546**	63.4**	63.567**	64.153**	64.396**
DIC:	45764.21	45834.78	45894.7	45926.57	45832.6	45766.31	45928.44
pD:	698.618	819.698	870.068	916.742	805.671	679.938	818.597

*=p<0.10 **=p<0.05

Note, no constant term provided due to disclosure control.